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ORIGINAL LECTURES.

INTRA-UTERINE THERAPEUTICS.

Delivered before the Section on Obstetrics and Gynecology, at the Thirty-eighth Annual Meeting of the American Medical Association held at Chicago, June 7-10, 1887.

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OF FREEPORT, ILL.

There is no subject in the whole domain of medicine that one approaches with more hesitation than the one to which I propose to call your attention for a short time to day. In the treatment of every organ of the human body, and in the management of every disease in the nosology, we as doctors are proverbially at variance; but in the therapeutics of no other portion of the human body do we stand at such antipodes as in that of the intra uterine surface. Some of our best writers regard the whole inner surface of the womb as a forbidden ground, to be avoided entirely, while others treat and manipulate it as they would any other portion of the body.

Perhaps I shall not be able to say anything new, or advance a single idea not already known to day, but having spent four years of the last twenty in Europe looking after what pertained to my profession, perhaps a report of my observations gained in this manner, together with thirty years' personal experience, may embody some facts that will repay you for the time I shall occupy your attention.

Among the most indelible impressions which I received as a part of my early medical education, and which influenced my practice in a marked degree for the first decade after I began active work, was the horror of the use of the obstetrical forceps, and a fear of the introduction of an instrument of any kind into the uterine cavity. To say that I can count a score of mothers and twice as many children whose lives were sacrificed as a result of my early fear of the forceps, is no exaggeration; and while a revolution in this domain of medicine has well nigh swept over the entire professional mind, and perhaps carried us too far in an opposite direction, I am convinced that a great majority of physicians of this country and of Great Britain hold the intra-uterine cavity in such profound awe that a large number of women are allowed to live a miserable existence, and are perhaps consigned to a premature grave, on account of the teachings that our best men gave a few years ago, and which are now held as orthodox ideas by many of the leading men who practice medicine in English-speaking countries to-day.

To sound the sentiment of the profession on the subject of intra-uterine medication, I issued, early in April last, 200 circulars, and sent out to the leading members of the profession throughout the United States, propounding the three following questions:

Question 1.—Under what circumstances do you use an intra-uterine injection *immediately* following delivery in child-birth, and what medicine do you use, and of what strength?

Question 2.—In the puerperal processes following child-birth, do you use intra uterine injections; and if so, what are your indications for the use of the same, and what remedies do you use?

Question 3.—Are you in the habit of using the curette, intra uterine injections, or other forms of medication to the intra uterine surface in diseases of the womb not immediately following child birth, and not connected directly with child-bearing?

To these questions I received over one hundred replies. More than one-half of those who answered say that they never use intra uterine injections of any kind, or under any circumstances.

Prof. Parvin says: *First:* In post partum hæmorrhage, whether primary or secondary, hot water uterine injections constitute one of the most efficient means of treatment; these injections are not necessary in the majority of cases, but in some they are.

Second: In case of retained placenta, whether adherent or not, but in which it is necessary to introduce the hand into the uterus, an antiseptic uterine injection should follow; such injection ought likewise to be used after the removal of a dead and decomposing fœtus. In all cases where the hand is passed into the naked uterus, I mean the organ after complete delivery, as is necessary in some cases of post partum hæmorrhage, I should subsequently wash out the uterus with an antiseptic solution.

The occurrence of puerperal septicæmia is an unequivocal indication, in my mind, for antiseptic injections in the uterus, these injections being usually 1 to 2000 (corrosive sublimate and water), and repeated twice in the 24 hours, a Bozeman catheter being employed; in some cases I use a 5 per cent. carbolic acid solution. If the uterus does not contract fully under the injection so as to chase out the corrosive solution, I compress it, and I also wash out the vagina with sterilized—that is, boiled—water, so that practically none of the solution remains either in the uterus or in the vagina for slow absorption, as

before taking this precaution I have seen some cases of mercurial poisoning follow such injections. When temperature and pulse fall I cease the injections. It is a terrible mistake to wait until the lochial discharge becomes offensive, or to first try merely vaginal injections. Strike the evil in its abode and in its beginning by antiseptic intra uterine injections, and I believe almost every case of puerperal septicæmia can be certainly and promptly cured, and usually without employing constitutional treatment to any great extent; antiseptic injections into the uterus constitute the causal, the essential treatment of the disease.

The curette, or Emmet's curette forceps, I have had occasion to use in many instances of incomplete abortion in the early months; most of the cases of menorrhagia or metrorrhagia consequent upon disease of the endometrium that have come under my care, have had their origin in an abortion. Nevertheless, there are other cases. Some years ago I had the terrible pain of seeing a patient die from an intra uterine injection of an iron solution given to arrest the hæmorrhage from fibroids, and I have never since used such injection except in the puerperal uterus. Local liquid applications, as of iodine, carbolic acid, and other solutions, I have frequently made to the cervical canal and to the uterine cavity, and believe such treatment should not be abandoned.

Dr. DeLaskie Miller says: *First:* I never advise intra-uterine injections immediately after delivery merely because the labor is completed. Hot water injections are sometimes useful in post-partum hæmorrhage.

Second: In septicæmia with offensive discharge, carbolized water.

Third: I use the curette when hæmorrhage or unhealthy discharges are caused by disease of, or by growths from, the endometrium.

Dr. Paul Mundé says: *First:* Injections of ice-water and vinegar in certain cases of post-partum hæmorrhage. It is usually proper to wash out the uterus after the birth of a macerated child or an operation which has necessitated the passage of the hand or instruments into the uterine cavity.

Second: In cases of puerperal fever where the infection can be shown to proceed from the uterus, or where fever follows the birth of a macerated child, or operative procedures in which the hand or instruments have been introduced into the uterine cavity, where there is a fetid discharge which persists in spite of vaginal douches, where the uterus is large and flabby, or where we have reasons to suspect the presence of decomposing bits of placenta or membrane within its cavity. The fluid used may be boiled water, or a 1-10,000 corr. sublimate solution.

Third: Yes. Chronic endometrites, uterine hæmorrhage; subinvolution or hyperplasia; intra-uterine vegetation or malignant disease; defective development. Means used are the curette, astringents, styptics, caustics, electricity.

Dr. W. H. Byford says: In answer to the third question: I do not use injections into the cavity of the uterus in non-puerperal cases. I use the dull curette in granular degeneration of the mucous membrane attended with menorrhagia.

Dr. C. D. Palmer says: *First:* I do not condemn all intra-uterine treatment. Think highly of it at times, but do not use it so often as I did in former years.

Second: Use intra uterine injection immediately after delivery, when child is dead, putrid; and at times after intra-uterine manual or instrumental manipulation. Use bi-delinde 1-8000 or carbolic acid one-half of one per cent. solution.

Third: Use intra uterine injection after delivery when septic symptoms are present or threatened, and have reason to believe cause is within uterus. Use curette and intra-uterine medication (not injection), for chronic intra-uterine diseases. The former more often than latter.

Dr. H. J. Garrigues says: *First:* When it has been necessary to introduce fingers, hand or instrument inside of the uterus.

Second: In case of a macerated fœtus I use 1 to 4000 bichloride of mercury solution, using two or three pints. In answer to your second question I would say I use injections in case of sepsis, especially puerperal diphtheria; I use 1 to 4000 bichloride, using two to three pints every 24 hours. A pencil containing 100 grains of iodoform is introduced into the cavity after the injection; cauterization with the chloride of zinc, 50 per cent.

About one-fourth of my answers show that the parties only use intra-uterine injections following labor to arrest hæmorrhage; using for this purpose hot and cold water, solution of perchloride of iron, zinc, iodine, vinegar, and the like.

Some of the men who answered me must have been born under a lucky star, for several of them aver that during an extensive practice extending over a period of from twenty to thirty years they have never lost a patient from any puerperal process. This certainly contrasts most markedly with my own experience, and while the results achieved in the lying-in institutions of this country and Europe are most brilliant as far as the mortality to both mother and child are concerned, I am of the firm belief that in private practice there is still much to be accomplished before we have done all for our patients that our duty demands, and that the new lights shed upon this branch of medicine will enable us to do.

Considering, first, the question of untra-uterine injections following immediately after child-birth, we are informed that even as far back as the time of Hippocrates and Galen this procedure was resorted to as a means of combatting uterine hæmorrhage and to facilitate the expulsion of the retained secundines. But this practice, like many others that were conceived and followed out by these eminent fathers in medicine, found but little favor in the ages that succeeded them; so we may say that this practice might be classed as one of the lost arts until revived in the latter part of the last century by Recobin. He strenuously advocated the use of cold water as an intra-uterine injection in cases of retained placenta or violent hæmorrhage. Levret and Baudelocque were also warm advocates of this practice. But all uses made of intra-uterine injections, up to the lat-

ter half of this century, were designed mainly to act mechanically or simply as an astringent to arrest the flow of blood. Not until the last half of the present century, when the germ theories of Pasteur and Koch, and the antiseptic precautions advocated by Mr. Lister, had gained a foothold in the minds of the profession, do we find any definite plans given to guide us in the use of injections into the uterine cavity.

Well do I remember a generation ago being counseled by the same man to always leave my forceps at home, for fear of being tempted to use them too early, teaching me at the same time that puerperal fever was a zymotic disease in no way communicable, and ridiculing all doctrines as to its contagious character.

Semmelweis, in May, 1847, announced the doctrine of the identity of child-bed fever with other pyæmic processes, and recommended the hands to be washed with chloride water, and afterwards on account of its cheapness the chloride of lime (10 oz. to 2 lbs of water), as a disinfectant. This, I believe, is the beginning of what has developed into our modern antiseptic idea of the management of child-birth.

Retzins, at Stockholm, in 1849, to prevent the spread and development of the puerperal processes used astringent injections, *per vaginam*, touched the abraided surfaces of the same with tincture of iodine and used nitrate of silver in strong solution as an intra-uterine injection. In 1855 Braun and Spaeth both recommended the use of a strong solution of alum in the womb in case of fever following birth, and where there was a foul discharge. In 1871 Mayhofer found in the fœted lochia of patients suffering from child-bed processes vibrios, which he believed to be the specific germ that caused the disease. These he cultivated in an ammoniacal solution, and injecting them into the genitals of the female rabbit, the animals died of the symptoms and with the lesions found in the human subject. Later Waldeyer, Orth, Heiberg, Spillmann, and others, made investigations confirming these experiments. In 1877 M. Pasteur communicated to the Academy of Medicine, of Paris, his investigations as to the specific character of the microbe of puerperal fever, and while he and other observers recognized certain forms of microörganism that accompany the suppurative discharge in the ordinary cases of child-bearing, these latter forms of organic life produce no profound symptoms upon the constitution of the patient, and were never found in the general mass of the blood itself. On the other hand, the true materies morbi of genuine puerperal fever was always found in the circulations, thus producing a series of most profound constitutional disturbances. The world over Mr. Lister is recognized as the father of antiseptic surgery. It is in Germany that one finds Listerism practiced with the minutæ and detail that puts far in the back-ground anything that the father of antisepsis practices to-day at Kings College Hospital. As a proof of this you would only have to witness the surgery of Bergmann, at Berlin, or Volkmann, at Halle.

Laying hold of this new theory as to the nature of all puerperal processes with the avidity that characterizes the German race, we find for a decade that antiseptic intra uterine injections were not only used as a means of combatting the morbid processes following child-birth in nearly all the German hospitals, but that every woman who gave birth to a child had her uterus washed out as a prophylactic measure to prevent the possibility of her becoming infected by the germ that this precaution was intended to destroy. Experience, however, soon demonstrated that this practice was not a judicious one, and that interference where no morbific symptoms were present was not warranted.

In 1882 Dr. Fischel published a lengthy article giving the results of experiments made on a large number of lying-in women in the wards of Prof. Breisky, in Prague. The result of these observations went to show that when intra-uterine therapeutics were used as a prophylactic agent in all cases of child-birth, the results were less favorable than where they were not used at all. But after limiting their use to such cases as were attacked with symptoms of child bed fever, viz.: increase of temperature and pulse-frequency, he reduced the mortality of septic fever in child bed to 0.21 per cent. With Breisky the whole subject of intra uterine treatment rests upon the theory pretty generally accepted to-day of the germ theory of the different puerperal processes, and the infection of the parts through the channel of open wounds, by means of germs contained in the atmospheric air. He says that such have been the brilliant results of this new treatment, that the cases observed by the older practitioners and recorded in the books, where, in spite of all treatment, the patient sinks and dies within a few days of an overpowering and generally diffused septic process, are now almost never observed, and are unknown in the practice of the younger members of the profession.

Starting out with the proposition that we may do harm with our treatment if improperly used, the rule laid down is this: that, while many patients who have a temperature of 38° or even 40° C. may come out all right, yet our observation teaches us that we can never depend upon such a result, and that we often see cases that begin very mild, but have repeated chills, and finally die of a septic process in spite of all that can be done for their relief. Therefore, when the temperature rises to 38.2° we should interfere.

Among the important points to be noted in the use of local antiseptics in child-bed fever is, first, if possible, to determine at what part in the genital track the *materies morbi* gain access to the system. This cannot always be done; but, as the vagina must be the channel through which all foul matters pass out, we should render this perfectly aseptic. A failure to do the work well will often be observed in a case like this: A patient has a foul smelling discharge from the vagina. To remedy this, though the patient has no fever, you use an ordinary vaginal injection or direct a nurse to do so. At once your patient is taken with a chill, and a high fever follows: How is this to be explained? Soon after confinement nature throws out on the abraded surfaces a layer of plastic lymph. You have washed this away, and rendered these

surfaces tenfold more liable to absorb morbid products than they were before. If you use an injection at all, do so most thoroughly. Hunt out the abraded surfaces on the vagina and apply, after drying them thoroughly, tincture of iodine, which is one of the best known antiseptics; for, while it produces no ill effects upon the tissues, it renders them free from the liability to absorb the secretions.

In the matter of intra-uterine injections, if you use an injection strong enough to kill the organic germ, and remove at the same time all débris from the uterine cavity, it is not necessary to repeat the same. For this purpose Breisky uses a 5 per cent. solution of carbolic acid, or a strong solution of chloride of lime. But the principal danger from intra-uterine injections is the liability of carrying with your tube foul matters from the vagina into the uterus; and hence the absolute necessity of disinfecting the vagina as a primary step in the operation.

Dr. E. Ehrendorfer, assistant to Prof. Späth, in Vienna, began in 1881 experiments in the intra-uterine use of iodoform in child-bed. He begins his article, entitled "Ueber die Verwendung der Iodoformstäbschen bie der intra uterine Nachbehandlung in Wachenbette," with the remark that, although iodoform has long been recognized as one of the best antiseptics in surgery, its mode of application to the uterine surface was a difficult problem. *First*, the introduction of the powder into the womb was a difficult process; then again. the use of a suppository of cocoa butter was a partial failure on account of the rapidity with which the menstruum was dissolved, and its consequent rapid passage out of the womb and vagina. To circumvent this difficulty a bacillus (suppository Stäbschen, as the Germans call it) was made after the following formula:

Iodoform	grms. 20.
Gum arabic.....	
Glycerine	
Amylum pura āā.....	200.

Make 3 suppositories.

The manner of using these was first to wash out the uterus thoroughly with a 2 per cent. solution of carbolic acid, and then, after the womb is well contracted, to dip the Stäbschen in a solution of carbolic acid, grasp it with a pair of curved forceps, and, using two fingers of one hand as a guide, to pass it into the womb. The indications for the use of this agent are: first, after all operations that require the introduction of the hand or any instrument into the uterine cavity. *Second*, it should be used in every case in which there is a rise of temperature after child birth, if it be evident that such increase of bodily heat has its foundation in a morbid process originating in the womb.

Some of the most brilliant results from the use of iodoform as an antiseptic in uterine surgery I saw illustrated in the service of the lamented Prof. Schroeder, of Berlin, during the past year. I saw in one case an intra-uterine fibroid weighing four pounds, and another of two pounds, removed *per vaginam*. These masses were not pediculated, but occupied a large part of the intra-uterine surface, and had to be cut away piece meal, the operation lasting from one to two hours, and yet both these patients recovered without any profound constitutional disturbance. When I contrast these results with my own experience, having lost two patients when this operation was much less formidable, and that evidently not from any special violence done to the womb itself, or to the surrounding organs, but from a septicæmia that followed, it has produced a firm conviction in my mind of the value of this agent as an antiseptic in this domain of surgery.

Much discussion has arisen of late as to the likelihood of the occurrence of iodoform poisoning when this drug is applied to the uterine surface. The drug had been used during a period of two years when I was last a student in the lying-in hospital in Vienna. Dr. Ehrendorfer says that when even as much as 10 grains of it was used in a single Stäbschen, he never saw any toxic effects manifested. König, after a long series of experiments, says that he never saw iodoform poisoning occur when less than 10 grains were used. Kowalski, in a paper lately read before the Vienna Medical Society, says that he has tried this agent in 326 cases as an intra-uterine application, without a single case of poisoning from the drug. He used it besides, as an experiment, upon his own person, and found that when he took no more than 6 grains in the twenty-four hours, no intoxication occurred, but even a much smaller dose caused toxic effects if long continued; showing the drug to be cumulative in its action.

To illustrate the manner of managing a not infrequent class of cases in midwifery, I copy the following history from my notebook: A woman, 40 years of age, was brought into Carl Braun's wards at 10 A.M., August 15, 1886. She had had some uterine pains, and had flooded profusely for twenty-four hours before her entry. Examination showed a partial placenta prævia, but, as she was not losing blood very rapidly, it was thought best not to interfere except to wash out the vagina and assist uterine contractions by massage. The fœtal heart could not be heard. Her temperature on admission was 38.2° C. At 11 P.M. it was 39.5. At 6 A.M., August 16, the child was delivered by version, dead. At this time her temperature was 41°, and for this reason was interference resorted to, not on account of loss of blood. At 7 A.M. she was placed upon the table, the vagina first well washed out with a bichloride solution, 1 : 4,000, then the womb irrigated with the same, then the uterine surface well scraped out with a large blunt curette, bringing away some shreds of membrane and some clots. The womb was now again irrigated with the mercurial solution, 2 litres being used, and following this the organ was washed out with a solution of thymol, 1 : 1,000, the iodoform Stäbschen carried into the womb and the patient put to bed. At 7 P.M., twelve hours later, her temperature had fallen to 37.5°, and at 11 P.M was only 36.6°; and from that time on the patient made an uninterrupted recovery. I watched this case with great interest, for I remembered. when a student of Braun's in 1878, having heard him say that if a woman's temperature rose to 40° C. within twenty-four hours after her delivery, she would *positively* die; for the reason that it showed

an ante-partum infection, to which he claimed the patients uniformly succumbed. The brilliant result in the case just cited shows how antiseptic intra uterine treatment has revolutionized all this.

To illustrate the management of another case I will draw again from my note book: A poor woman living a distance of fifty miles from Vienna was taken in labor with the complication of an arm presentation. Physicians near by made an ineffectual effort at version, but not succeeding, they dispatched her by rail to the lying-in wards of Karl Braun. When brought in for examination it was found that the abortive attempts at turning had resulted in a laceration of the cervix up to the body of the uterus and within the narrowest limits of the peritoneum itself. From this the poor woman had bled until she was almost *in extremis*. Braun's blunt hook was used to decapitate the child—which was already dead—and delivery was effected without great difficulty. The parts were disinfected by the injection into the vagina and uterus, of a 5 per cent. solution of carbolic acid, followed by a 1:1000 thymol injection.

The laceration in the womb was brought together by three silk sutures, the iodoform Stäbschen was introduced and the woman put to bed. Though extremely exsanguinated this woman made an uninterrupted and excellent recovery.

The point I wish to make is this, and bring these two cases to illustrate my idea, that where intra-uterine injections are used after delivery because it has been found necessary to institute any manual or instrumental procedure, and where there is no evidence of an ante-partum infection manifesting itself, by an increase of temperature and the like, it is not necessary to resort to the bichloride of mercury injections, but it is better to use either a 5 per cent. solution of carbolic acid or a 1:1000 thymol injection, using the iodoform Stäbschen in either case after the injection.

Coming now to the consideration of the second question in my circular, that is, under what circumstances should we use intra-uterine injections in the puerperal processes, and what should we use? They should be used, as I have intimated, whenever the temperature rises to 38.5° and where such rise is evidently caused by some morbid process going on in the genital track. That the bichloride of mercury should be used not stronger than 1:4000; that usually the blunt curette should be used to remove any portion of membrane or clots; that the mercurial solution should be again repeated, and then the womb washed out with simple hot water or thymol solution to wash away any redundancy of the corrosive sublimate. The iodoform Stäbschen should be used as a last part of the operation, whatever solution is used as the injection.

Now, if this work be well done its repetition is generally unneccessary. I must take issue with some of the best men who answered my circular—and some of them are the best authorities in the United States—on this point, many of them recommending the repetition of the bichloride solution as often as two or three times a day for days together. This I believe to be a dangerous procedure unless great care be used to wash away each time any redundancy of the mercurial solution. Again, these repetitions are unnecessary if they are used early and are well used.

If your local treatment be not followed by an amelioration of the constitutional symptoms, you may be assured that the process has passed beyond the limit of a local one, and has become a generalized infection over which your antiseptic local treatment will exercise no influence.

In passing to the consideration of the third division of my subject, viz, the application of medicines to the inner surface of the womb at a time not connected with child bearing or immediately following that act, I will not attempt to even give a *résumé* of the different agents that have been used for this purpose, or of their mode of application, but will discuss the question mainly in connection with the use of the curette and certain adjuncts as a part of such treatment.

Here we enter a field where the profession are even more at variance than in the matter of intra-uterine medications in child-birth and the diseased processes immediately following that act. In perusing the works of some of our best authors on gynæcology one is struck by the fact that, while they recommend the greatest caution in the use of the uterine sound, they do not hesitate to advise the swabbing out of the uterine canal with pure tincture of iodine, carbolic acid, nitric acid, and the dropping in at hazard upon this delicate surface portions of pure nitrate of silver of considerable size. To my mind this inconsistency is easily explained. For instance, that man whom you will all recognize when I say that he is the greatest authority on gynæcology, living or dead, of this or any other country, tells us to use the uterine sound without a speculum and without giving us any directions as to the disinfection of the vaginal track before its use. Now what is one of the accidents that may follow this simple procedure, even if done with the greatest care? It is the carrying into the uterine cavity of organic germs that are likely to be found in the vaginal track and thus setting up of a morbid process from bacterial infection. Has not nearly every one who listens to me had an experience something like this: After a severe labor you find it necessary to use the catheter on your patient one or more times. From this time on the woman is troubled with frequent mucturition, vesical tenesmus and the like. Examine her urine with a microscope and what do you find? It is loaded with bacterial germs. How now did they gain access to the bladder? They were carried there by your catheter from the vaginal walls. In the same way you are likely to carry these bodies from the vagina to the uterine cavity through the medium of your sound.

Therefore, you should never use the catheter in the female without first clearsing the parts with which your instrument comes in contact, and should never introduce a uterine sound or any other instrument into the womb until you have first thoroughly disinfected the vaginal track.

I believe, also, that if this canal was thoroughly disinfected before the use of the obstetrical forceps, many of the accidents that follow such operations

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would be obviated. Récamier, who introduced the practice of curettage, into France, was followed by many warm disciples both in that and other countries. To scrape out the womb was in fact the rage for a decade or more. The great Nélaton caught the infection, and operated on a large number of women, until two of his patients died as a result of the operation. From this time on he abandoned a procedure that he became convinced was eminently dangerous to life. Prof. Gilleau, of Hôtel Dieu, himself a pupil of Nélaton, inherited a strong prejudice against this instrument from his old master, and yet I have seen him use it with a boldness that would almost rival the practice of Martin himself. In a clinical lecture on this subject he says: "The whole question of the safety or danger of the operation hinges on the point as to whether you perform it perfectly antiseptically or not."

I have been a pupil at three different times of Martin's, in Berlin, and when I saw him first scrape out, wash out and treat the uterine surface in the manner in which he does I felt a feeling of horror run through me akin to that which one would naturally experience at seeing an operation performed that was considered most likely to result in the death of the unfortunate patient. Some years elapsed after seeing these operations performed, during which time I saw treated a large number of gynæcological cases, but it was not until I had seen them frequently repeated, and was able to see some of the good results following their use at my last visit to Berlin, that I became an advocate of the practice. My confidence in the treatment had its foundation in the conviction that its dangers were averted by the observance of the most perfect antiseptic precautions, and since my return from Europe this spring I have treated several cases with apparently the most happy results.

Having determined to institute our intra-uterine treatment, among the first questions presented as a preliminary step in the procedure is the necessity or advisability of using some means to dilate the uterine canal. In a vast majority of cases I hold mechanical dilatation to be unnecessary. The failure to get an instrument into the womb does not usually arise from a narrowing of any part of the track but from a deviation in the direction of the canal in some part of its course. To overcome this it is only necessary to catch the anterior lip of the womb and produce sufficient traction to straighten the channel. I show here the very ingenious manner of practicing this maneuver by the late Prof. Bandl.

If it be necessary to dilate the womb, I believe that it is generally better and safer to accomplish this by using Hegar's dilators than by any form of tent, on account of the liability of the use of the latter to be followed by septic infection.

Having spoken of the use of the curette and its dangers, we come now to the subject of intra-uterine injections in general gynecological practice. Among the possible dangers that may complicate this operation is the passage of the fluid used through the Fallopian tubes into the peritoneal cavity. That the dangers of this accident have been greatly exaggerated I am well convinced. In a paper read before the Scientific Congress of France at Havre, in 1878, Prof. Gallard demonstrated that the fears that we have entertained as to the entrance of fluids injected into the uterus via the Fallopian tubes into the peritoneal cavity are entirely unfounded. In a series of experiments it was shown that in the cadaver it was not possible to force water into the uterus with sufficient force to cause it to enter the peritoneal cavity without first tying the canula used firmly in the cervical canal by passing a ligature around the neck of the womb. Gallard says that the size of the internal os may be fixed as that of a No. 12 Charriere, and therefore if we use a No. 10 no danger can arise. Dr. Braun's instrument, which I show you, I consider the very best one for this purpose, as it differs from that of Bozeman by having the channel of exit several times larger than that by which the fluid enters the uterine cavity. No syringe should be used as a means of forcing any fluid into the womb, but an irrigator, in which the pressure can be most accurately regulated by the height to which you raise your reservoir. As a preliminary step I would always advise the washing out of the womb with some antiseptic fluid before the use of the curette.

While the curettage of the inner surface of the womb for the relief of obstinate hæmorrhage, and for the removal of retained portions of the secundines after abortion, is a well-recognized and orthodox procedure, I believe that its application can be extended to a much larger field in well selected cases. Take the case of a woman who has borne children; her womb measures from one half to one inch more than normal, there is no extensive laceration at either side of the cervix, yet the mucous membrane of the canal is eroded and everted around the entire cervical canal. She has a profuse leucorrhœal discharge, and her menses may be either scant or profuse. If I ask ten of the best men who listen to me how they would treat such a case, I would be likely to get ten different modes of management in answer to my question, and after following out each recommendation, I would probably find my patient but little better than when I began the treatment of her case. The average man will never see anything in this case farther than the changes in and around the cervical canal, and his treatment is generally an entire failure, for the facts are that the entire mucous surface of the womb is diseased, and any treatment, to be successful, must be applied to this entire track. The mucous follicles are immensely enlarged, and secrete an abundance of an abnormal secretion.

In a case like this, if you will carefully use the curette to the entire intra-uterine surface, removing these enlarged follicles, and then from time to time irrigate the womb with a mild astringent wash, you will be astonished to see what progress your case will make toward recovery. If there be a considerable relative elongation and enlargement of the cervix I would perform, as a part of this treatment, the amputation of the lower portion of the cervix uteri.

It is necessary, of course, before instituting any intra uterine treatment, to convince yourself that there is no fixation of the womb or a peri-uterine infiltration that complicates the case. Under ether of

these conditions any manipulation of the organ may light up a latent diseased process, and be followed by consequences of a most unpleasant character.

DISCUSSION.

DR. G. A. MOSES, of St. Louis: The paper just read, which so admirably states the present advanced stage of science for the proper treatment of women suffering from puerperal disease of septic origin, leaves scarcely anything to be said. We must agree entirely with the propositions made by the gentleman, but I think it probable we are at extremes in some of the procedures advised. For example, I can scarcely see the possibility of infection by the passage of the catheter, provided it be clean before introducing it into the bladder, on account of the slight contact with the parts which takes place. The reason I refer to this is that I think we are disposed to attribute to the wrong cause inflammations which occur under these circumstances. We should look deeper for the causes of diseases that are presumed to be conveyed to the parts by our carelessness, which I am satisfied is not always the case. As regards the fear of conveying germs into the vagina by the use of forceps or any other instrument that may be necessary during labor, the vagina is from the beginning more or less filled with discharges which I take to be most thoroughly antiseptic, unless there has been some preëxisting disease, and for the purpose of using the hand or instruments I cannot see that it is ordinarily advisable to douche the vagina with strong antiseptic fluids. It has not been my practice, because I think there would be more harm than benefit. Of course the strictest antiseptic precautions should be observed in regard to the hands, it would be criminal to do otherwise. One other point in relation to the method of curetting; the value of this mode of treatment is undoubted, and I agree in the method of curetting and the instrument exhibited, which I vastly prefer for efficacy and satisfactory work to any of the so-called blunt curettes. Where it is necessary to remove any thickness of mucous membrane we may desire, I have never been satisfied with the slight work that the ordinary really blunt curette has done. Where I wish to remove diseased membrane or affect the cause of inflammation, I prefer an instrument modeled something after the one exhibited—a hollow spoon, with which one can remove thoroughly all the diseased parts, and can, by withdrawal of the instrument from time to time, examine the parts which are removed. As a matter of course antiseptic solutions should be used for cleansing the parts, and the after-treatment following the curetting should be done in the manner described. I agree with the gentleman that antiseptic douches for irrigation should be used at once and that no repitition is ordinarily necessary. The employment of a too mild, or inefficient, or imperfect, irrigation is worse than useless; it is temporizing and encouraging disturbances which may prove fatal. Therefore, a thorough irrigation of the puerperal uterus with a disinfectant solution should be used at first. I think the author did well to impress upon us the necessity of the use of a comparatively innocuous wash after the injections of the stronger solution of sublimate. If this is always done and we do not allow any portion of the sublimate solution to remain we will entirely avoid any of the mercurial poisonings which have been so frequently urged against the value of this method.

DR. H. O. MARCY, of Boston: As long ago as 1881 I was heard on this topic. Three years ago I reviewed the ground carefully. I am glad to hear the paper, and I am also glad to hear the remarks of Dr. Moses, that it is better never to do half-heartedly this work. I believe the greatest danger in antiseptics to-day lies in half doing. If there is a greater reason for reviewing this subject, it would be this: If an antiseptic application is to be made to the uterine cavity the reason for its making is that the cavity is septic, and that is the reason why uterine injections ordinarily are to be recommended. There is no part of the body where the septic processes go on more rapidly. It behooves us to be carefully on the watch. I would like to emphasize the wisdom of the careful observation of the thermometer. The moment that the temperature rises remember there is danger. I would again emphasize this: In all obstetric operations insure a clean vagina. I believe the vagina is septic and there are always some germs in it. If you find that there is danger, be sure you are thorough, hence the curetting and removal of these semi-decayed or necrosed portions of tissue we call septic. It can be removed carefully, and then we have the condition of an aseptic cavity. But remember, that oftentimes you will find the danger is beyond your local point and your septic fever is not less than the regions of the enemy passed beyond the uterine chamber.

Again, in regard to the applications in the uterus in a non-pregnant state; the curetting I believe to be not only very safe but very wise. In the last twelve months I have curetted 100 uterine cavities, and probably more. If we do this thing let us do it in a whole-hearted, conscientious way, understanding the reason why we do it and understanding that we are safe if we use bichloride of mercury. I have not the slightest objection to using a solution of 1:1000 in the uterine cavity, but I earnestly protest against any carelessness in this matter. I have made use of iodoform year after year, and I have never seen a case in which I thought my patient was injured from either carbolic acid, bichloride of mercury or iodoform.

ORIGINAL ARTICLES.

HAY FEVER.

The First Prize Essay of the United States Hay Fever Association for 1887.

BY SETH S. BISHOP, M.D.,

SURGEON TO THE ILLINOIS CHARITABLE EYE AND EAR INFIRMARY, TO THE SOUTH SIDE FREE DISPENSARY, ETC., CHICAGO, ILL.

The limitation placed upon the length of this essay is my apology for the incomplete manner in which the subject is treated. Believing that those

for whom this is written will be principally interested in the cause and treatment of the disease, I have devoted most of the paper to the consideration of these topics.

Pathology.—Hay fever is a functional nervous disease. No organic change has ever been found in the nervous system to which the peculiar suffering in this malady could be attributed. The symptoms are manifestations of exaggerated functional activity.

There are three factors which satisfactorily account for all the phenomena presented by a paroxysm of hay fever: *First*, highly susceptible nerve centres; *secondly*, over-sensitive nerve ends; and *thirdly*, the presence of one of a large number of exciting causes. The conclusion that this is a functional nervous disease is a logical one, based on anatomical, physiological, pathological, and therapeutical facts. Let us examine these *seriatim*.

One of the centres of the sympathetic nervous system—the spheno-palatine ganglion—supplies branches to the lining membrane of the nose, throat, soft palate, and Eustachian tube. It possesses a sensory, a motor, and a sympathetic root. It is connected with the pneumogastric and facial nerves, and through its numerous connections an intimate sympathetic relation is established between the nose, throat, ear, larynx, and bronchial tubes. Sympathetic, from the Greek words σύν and πα'θος, meaning suffering together, precisely expresses it. Removal of this ganglion causes a severe catarrhal condition of the nasal mucous membrane. This membrane is continuous with that which lines the nasal duct and eyelids, the throat, Eustachian tube, middle ear, larynx, trachea, and bronchial tubes. A congestion started in one portion of this membrane may extend to other parts, as the inflammation in erysipelas may spread over the body.

The nerve theory is not incompatible with the fact that a diseased membrane may be found in the nose after many recurrences of congestion of the parts through years of suffering. Neither is it controverted by the excellent general health and superior intellectual endowment of this class of patients. Mental workers, such as authors, physicians and clergymen, constitute this class, while manual laborers seem to be rarely affected. I have met with but two hay-fever cases in a dispensary practice affording opportunities for the observation of several thousand cases of various diseases, in a climate prolific of nose and throat affections.

I will enumerate, briefly, several arguments in support of the nerve theory: The nervous temperament of the sufferers; the hereditary character of the disease; the identity of its different forms; its similarity to asthma; its periodicity, and the surprising suddenness of its coming and going; the stimulant, tonic, and sedative character of the best remedies—nerve remedies; the effect of mental impressions and physical exertion in preventing and arresting attacks. All these are suggestive of functional nervous derangement.

Predisposing and Aggravating Causes.—Heredity and the temperaments classed as nervous are, strictly speaking, the predisposing causes. Broadly speaking, whatever diminishes the powers of resistance predisposes one to attacks. Most foreign substances which are liable to come in contact with the nasal mucous membrane will provoke paroxysms, inasmuch as the mere contact of a polished silver probe will excite sneezing. Dust, pollen, infusoria, dry hot air, cold, damp, or foggy air, smoke, gas, bright light from the sun, electric light, gas-light, sunlight reflected from snow, etc., are prolific causes. Much may depend on the character of the dust, for this is determined by the geological formation of any given locality. So wide is the distribution of dust by the varying currents of the air, that places which would naturally afford immunity from this disease may be visited by storms of noxious foreign pollen. A sea voyage is considered a certain cure for an impending attack, but even there the enemy may lurk unseen in the folds of the canvas or clothing, or in the upper currents of the atmosphere. Darwin has shown that pollen has been wafted many miles over the Atlantic. Showers of pollen have fallen hundreds of miles distant from its native soil. Dust may be deposited in curtains, carpets, etc., and be retained for indefinite periods before finding lodgment in the respiratory tract. The upper strata of the air may be laden with pollen, as it is at times with volcanic dust, which may be so dense as to darken the sky at great distances from the source of supply. These truths illustrate the omnipresent and occult character of the exciting causes.

The greatest suffering occurs from May to October, especially in the country, and for the following reasons: *First*, at this season the air swarms with the fecundating dust of plants and flowers; *secondly*, the dry, hot air of the country is not moistened during the day except by occasional rains; *thirdly*, the dry surface-soil affords the winds a never-failing supply of dust; *fourthly*, one is not protected from the dazzling brilliancy of the sun by tall buildings in the country as he may be while pursuing the avocations of city life. The streets of cities are deluged with water in summer; the dust is laid; the air is cooled and moistened by evaporation. Great buildings afford protection from the scorching rays of the sun. The denser the population the less the vegetation, and the greater the relief to asthmatics and hay-fever patients.

I desire to lay especial stress upon the irritating effect of dry, hot air. It causes great activity of the muciparous follicles, and imposes a heavy burden on the glands to pour out sufficient mucus to keep the membrane moist. One must avoid dry heat from stoves and furnaces. Much thumbed books and newspapers that are a little musty are exciting causes I have not seen mentioned.

Advice to the Sufferers—Treatment.—One may take a sea voyage, or visit the White Mountains, or one of the many other well-known resorts; or he must combat the disease with such weapons as our list of palliatives affords.

A retreat which relieves one may not be free from all irritants which might affect another. I have known places to be recommended as hay-fever resorts where some patients suffered severely. Mackinaw

and Petosky, Mich., the Lake Superior region, and the mountains of Colorado and California are favorite resorts. Many asthmatics experience entire freedom from suffering by changing a country residence for one in the heart of a great city. I have known the same change to greatly mitigate attacks of hay-fever; but if the smoke and soot from soft coal are obnoxious, one must avoid a neighborhood of factories, hotels and large restaurants, whose chimneys pollute the air with smoke.

Another important preventive measure is the protection of the body from the vicissitudes of the weather. Fabrics of vegetable fibre, such as cotton and linen, should not be worn next the skin. Animal fibre, such as woolen or silk, favors absorption and evaporation of the perspiration, and keeps the temperature of the surface of the body equable. It prevents chilling. Woolen is preferable to silk, except in the hottest weather, when thick silk underwear affords more comfort and sufficient protection. Another excellent precaution is to have garments brushed daily before wearing them, to remove all dust. The air of sleeping and living apartments should be kept pure and moist, and not above 70° F. in winter. Plenty of sleep should be had. The bodily temperature should be modified in hot weather by means of cooling drinks and ices. The generous use of these before retiring will reduce the temperature and avert attacks. In cold weather the body may be heated and bathed in perspiration by means of a cup or two of hot, strong coffee. I have repeatedly observed this simple remedy avert attacks of hay-fever, as well as of asthma. A glass of wine subserves the same purpose. Coca wine has an additional exhilarating effect; but great circumspection must be exercised in recommending these nerve remedies. Unfortunately, it is with this class of medicines that pernicious habits are established. It is by these nerve stimulants, tonics and sedatives that we conserve and increase the powers of resistance, combat exhaustion, and soothe irritability of the nervous centres.

Remedies to prevent enervation should be taken before and during the periods of suffering. The most reliable in this class are quinine, iron, strychnine, arsenic, phosphorous, caffeine, and electricity. Grindelia robusta has proven so unsatisfactory in my experience that I cannot indorse it. In that form of hay fever where there is active or passive congestion of the brain, ergot is indispensable. Bromide of soda, for the same purpose and for its tranquilizing effect on the irritable nervous tissue, is preferable to bromide of potash, in that it contains a larger percentage of bromine, is less vitiating to the blood, and is less disagreeable than the potash.

It is obvious, from the nature of these medicines, that they should be taken only under the directions of a physician.

These remedies suggest the blending, like prismatic colors, of the subjects of preventive and

Palliative Treatment.—Quinine in tonic doses may not only prevent attacks, but will greatly mitigate them if taken in doses of two or three grains every two or four hours during the day. But quinine in large and continuous doses produces congestion of the middle ear, and probably of the auditory nerve. I have had many cases in which there was no room for doubt that it caused permanently impaired hearing and subjective noises. The bromides are not less useful during than previous to attacks. They not only soothe the irritable nervous centres, but induce refreshing rest—

"Tired Nature's sweet restorer, balmy sleep."

Chloral hydrate alone, or combined with bromide, in bromidia, is more certain still. But the dangerous character of chloral, and the peculiar ill-effects of both drugs, forbid their indiscriminate use.

Better than all other drugs in my experience has been a happy combination of morphia and atropia in easily divisible compressed tablets. Not more gratifying results could be expected from palliative medication than I have obtained from this. For several years past I have rarely employed morphine in my practice without administering atropia with it, believing that the antidote should go with the poison. The relative proportions which have proved so satisfactory are $\frac{1}{300}$ grain of atropia to $\frac{1}{8}$ grain of morphia, $\frac{1}{150}$ grain of atropia to $\frac{1}{4}$ grain of morphia, $\frac{1}{100}$ grain of atropia to $\frac{1}{3}$ grain of morphia, if this dose were required. A larger proportion of atropia in repeated doses is likely to cause a temporary dimness of vision. If carefully adapted to any given case I do not believe one need fail to prevent an attack or modify one already begun. Where I have been able to administer the remedy myself in the early stage of hay-fever or of acute nasal catarrh I have never failed to prevent the development of an attack, or, at least, materially abridge it. If the impending attack is a light one, $\frac{1}{8}$ grain of morphia should be given at the first premonition. If the symptoms disappear, that suffices. If they return after a few hours, the dose should be repeated, and in this way the paroxysms should be entirely prevented. If the threatening attack promises to be a severe one, I give $\frac{1}{6}$ or $\frac{1}{4}$ grain of morphia (with atropia always), and I have found it necessary in a profound seizure to give $\frac{1}{3}$ grain before the trouble could be subdued. Minimum doses may be better as a rule, but in this malady the reverse is often true. When a small dose may not prevent suffering, a little larger one, to produce a decided impression on the nerves, may be entirely successful. Those who are conversant with the physiological action of these drugs will readily understand how perfectly this remedy meets all the indications for treatment. It relieves excitability or over-susceptibility, and arrests the flux. I regret that on account of the necessity of brevity I cannot elaborate this important subject. Wine has often acted like magic in arresting attacks. This is indicated in those cases where anæmia of the brain exists. It seems to arouse it from lethargy and fortify it against paroxysms. Coca may be advantageously used combined with it when there is debility or mental depression. Strong coffee is preferable to wine for obvious reasons, but it has the disadvantage of preventing sleep in many cases, while a moderate dose of wine may promote sleep. Nitrite of amyl, in five-drop doses, inhaled from a

handkerchief, will often relieve attacks, especially if they are accompanied by asthma. Aconite should be used in case of fever.

Cocaine, in a four or ten per cent. solution, applied with a camels'-hair brush, gives speedy relief. The patient should never omit clearing the membrane of mucus before applying any local remedy, else the medicine is diluted and prevented from acting on the seat of irritation. Better than the solution is a six or ten per cent. powder of cocaine and sugar of milk, applied to the nasal cavity with a pocket insufflator or powder-blower, small enough to carry in the vest-pocket, and to be used unnoticed the instant an attack threatens. The vulcanite tip of the soft rubber tube should be applied to the lips, when a gentle puff of the breath will blow a cloud of the anæsthetic powder into the nasal cavity, when the hard rubber tube is properly directed. This instrument is constructed after my large office insufflator, which is operated by a rubber bulb containing soft-rubber valves. The effects of cocaine may last several hours, but repeated applications may be necessary to keep up continuous insensibility of the membrane during prolonged attacks. However, it should be known that some persons possess an idiosyncrasy which forbids the use of cocaine. The primary action may produce anæsthesia and anæmia of the membrane, regularly, but the blood-vessels may become dilated and remain so, instead of returning to their normal calibre as they do in most cases. This condition of secondary hyperæmia is attended with intense hyperæsthesia and all the symptoms of severe hay-fever. Fortunately there seem to be few who are so distressed by this remedy, and I have employed it in many cases of various diseases without observing any disagreeable symptoms.

Bishop's Pocket Insufflator

Rhigolene spray may be mentioned in connection with cocaine, since they are both useful in producing numbness of the mucous membrane before cauterizing or cutting it. Rhigolene will freeze the parts in two seconds, and is even more efficacious than cocaine in rendering an operation bloodless. Morphine spray or powder is useful. Zinc sulphate and glycerine of tannic acid are beneficial in cases of inflammation or ulceration. Inhalation of spirits of camphor and of eucalyptol have proved grateful in light attacks. Chloroform and fumes from nitre-paper will often help the asthmatic type.

When an attack seems imminent, the determination of blood to the turbinated bodies may be relieved by derivation by means of active muscular exertion,—such as running rapidly up-stairs, putting the muscles of the hands, arms, and legs on the stretch, or practising calisthenic exercises,—anything to cause sudden and strong tension of the muscles and divert the mind. In this manner the pent-up nervous energy, struggling to escape, finds vent.

Operations on the nose are in fashion now. They have their good and bad features, like other fashions; but the reason that operative measures for the destruction of the offending mucous membrane and nerve ends in the nose often fail to cure is that the nerves distributed to that part are not the only ones which are over-sensitive. Irritants impress the nervous centres through various other channels. When the sensitive areas appear to be circumscribed by the limits of the nasal mucous membrane, the destruction of the sensitive areas in that membrane by the galvano-cautery, chromic acid, the snare, saw, or knife, may be expected to afford relief. Especially is this the case when there is much enlargement of the turbinated tissue, or such deformity of the nasal partition as to cause pressure on the turbinated bodies. But so extensive are the connections of the nerves supplying the respiratory passages, so numerous and multiform are the exciting causes, and so various are the depots for the reception, and the channels for the transmission, of sensory impressions, that too much relief must not be expected from the removal of the turbinated tissues. Moreover, an operation which will relieve one may not only benefit another, but may prove positively injurious. I have known cauterizations of the back part of the lower turbinated body to cause the most distressing and alarming attacks of true asthma, which lasted for two or three months, and though the asthma apparently died out, it left a legacy that will probably make itself felt with every recurrence of a bronchial irritation. I do not cite these facts to discourage those who might be benefitted by operative procedures,—and they may be many,—but because the truth touching all sides of this question should be known. Another fact of importance to the patient is that after extirpation of the interior turbinated swellings, relapses may occur which will demand repeated operations. But if the tissues are to be removed, the sooner it is done the better. It should be borne in mind by the operator that it may be necessary to carry the destructive process into the vault of the pharynx, where granulations and adenoid vegetation may have become centres of irritation.

The question will always arise: In what class of patients may we expect the operation to prove curative or beneficial? It is obvious from the facts I have related, that we must confine this procedure to those cases in which there is a diseased condition of the mucous membrane of the nose or throat, or to those individuals in whom the paroxysms are provoked generally by irritants acting on these parts; or, I may mention a practical criterion by which to decide. If a reliable preparation of cocaine, from four to ten per cent., will arrest a severe paroxysm when applied to the sensitive spots, an operation will probably be useful. It might be supposed, on cursory examination of the subject, that this classification would include a vast majority of hay-fever subjects. But a study of several hundred cases shows that in nearly one-half the number attacks were occasioned, not by local irritants to the nose alone, such as dust, but by causes of quite a different nature. Such patients may suffer at any and all seasons from various occult causes, and will probably prove refractory. The other class consists of those

who inhale the materials which are provocative of their suffering. Remove the material which irritates, or the tissue which is irritated, and we may confidently expect relief. These are the people who suffer most in the summer months, when the grasses are ripening and the flowers blooming, and all the air is filled with the dust of the earth and the pollen of myriads of blossoming plants. Let us hope that this class may supply medical literature with its most brilliant cures and its most grateful beneficiaries.

719 W. Adams Street.

A NEW METHOD OF INTRA-PULMONARY MEDICATION, WITH REMARKS UPON ITS USE WITH PNEUMATIC TREATMENT.

Read in the Section on Medicine, Materia Medica and Therapeutics, at the Thirty-Eighth Annual Meeting of the American Medical Association, June 7, 1887.

BY G. W. McCASKEY, A. M., M. D.,

PROFESSOR OF DISEASES OF THE THROAT AND CHEST, FT. WAYNE COLLEGE OF MEDICINE; FELLOW OF THE AMERICAN ACADEMY OF MEDICINE, ETC.

There are few questions of higher importance in practical therapeutics than that of topical medication of the lungs. In discussing this question we may start with the postulate that particles of matter can enter the alveoli with the inspired air, be deposited upon their walls, and taken thence into the circulating fluids of the lymph spaces and capillaries.

If carbonaceous particles floating in the inspired air can enter the pulmonary tissue until it is colored black, then the possibility of similar medicinal agents behaving in like manner must be conceded. These facts, first correctly interpreted by Bouckman in the lungs of miners in the Hartz mountains, have been abundantly confirmed by Löwe, Petrens, Traube, Zenker, Von Ins, and many other reliable observers. Nor can it be argued that the processes of anthracosis are too slow to make their application to therapeutics practical or fair. On the contrary, the absorption of these solid particles is remarkably rapid. Ruppert, for instance, found soot in the bronchial glands of a rabbit after two hours' inhalation of smoke. These particles of soot must have entered the lymph spaces, thickly set throughout the respiratory tract, and traveled the distance of the lymphatics to the bronchial glands in this comparatively short time. To aid this so-called absorption the irritation of the alveolar walls causes the exudation of large ameboid cells, which envelope these foreign particles in their protoplasmic bodies and wander back with them into the pulmonary structure as actually observed by Von Ins and Oertel. To further show that these particles penetrate beyond the bronchial tubes, cinnabar has been found upon the alveolar walls a few hours after its inhalation. If any doubt should still remain concerning absorption from the pulmonary surface, Ruppert's experiment of throwing India ink into the bronchial tubes, and finding the capillaries beautifully injected, and the urine perfectly black in twenty minutes, must be regarded as conclusive.[1]

[1] For details and fuller discussion see Oertel's Respiratory Therapeutics.

The importance of absorption becomes apparent when we reflect that the energy of the therapeutic action depends in great measure upon the depth to which the agent penetrates in the inter-cellular spaces of bronchial and alveolar walls.

The real practical question as it stands to day is: In what form and under what physical conditions can medicinal agents be most effectually introduced into and made to exert their influence upon the inter-alveolar and deep bronchial structures?

Of the possible forms we may distinguish four, viz: Dry powders, gases, pulverized fluids, and vapors.

The use of powders by insufflation is practically limited to parts above the *rima glottidis*. At any rate, however, their penetration beyond the tracheal bifurcation with sufficient uniformity to meet the requirements of topical medication is extremely improbable. Their tendency to irregular distribution—to accumulate in some places, with none in others—makes their action correspondingly irregular. For these reasons they can be dismissed from further discussion in this connection, although their actual penetration into the alveoli has been demonstrated.

Gases are not open to the same objection, their physical conditions being precisely identical with those of the atmosphere. The gases heretofore used for inhalation probably act more in a general way after absorption than by direct local action. At least, the clinical results obtained are in accord with this view; and it may be assumed that the local therapeutic effect of the respirable gases is not sufficiently energetic to justify any very sanguine expectations in this direction.

The construction, by Sales Giron, in 1858, of an apparatus for pulverizing fluids for purposes of inhalation opened a new era in inhalation therapeutics. With the advent of the various spray-producing appliances, the local medication of the larynx and trachea became easy and certain. Whether pulverized fluids, *as such*, however, can penetrate the alveolar passages must be regarded as an open question. The tendency of these fluid particles in transit is to coalesce and form larger particles or drops, which, by impact or gravity, soon adhere to the mucous lining; and this, long before they have reached the alveoli, or even the bronchioles. The observations advanced to prove the penetration of these fluid particles, as such, into the alveoli are not at all conclusive. In Zdekaur's case of fatal hæmoptysis (Oertel) the patient had inhaled just before death a spray of solution of perchloride of iron. After death, Dr. Hohn found an excess of iron throughout the pulmonary tissue. But as there is normally only about one part of iron to two thousand of blood (Becquerel and Rodier), the introduction of an extremely small quantity would be sufficient to show an increase. What did reach the alveoli was probably not spray but vapor. Oertel seems to hold the same opinion, for he says: "It is not improbable that what is already a steamy mist may, in the smaller bronchi and lungs, be converted into actual vapor."

If the purpose be simply to medicate the larynx, trachea and large bronchi, then the experiments of

Tavernier, Moura-Baurouillon, Gratiolet, Sommerbrodi and others definitely settle the question. With moderately deep voluntary breathing it can be most effectively accomplished. But I think it may be safely assumed that *pulverized fluids, as such, do not reach the alveolar spaces.* To this it may be answered that so long as the medicine reaches its destination, its precise form is not of practical importance, however interesting it may be scientifically. But such a position is entirely untenable; for the physical conditions and processes best adapted to each are dissimilar, and to use them indiscriminately is both unscientific and irrational.

Vapors, unless intrinsically irritant, offer no essential obstacles in the way of inhalation. Their physical conditions, while they retain the vapor state, are identical with those of a gas such as the atmosphere. There are no particles to coalesce or be carried by impact against the angles of the respiratory channel. They form an integral and homogeneous part of the atmosphere with which they are blended, and meet the physical conditions of respiration fully and completely. But something more than mere contact of this mixture of vapor and air is desirable. It should be condensed and deposited upon the pulmonary surface.

But we are met here by adverse physical laws; for, as Mr. Joseph Ketchum has pointed out, the increase in temperature of some twenty degrees which the inspired air undergoes (assuming the temperature of the room to be 70° F.) will make it retain not only all the moisture which it could possibly be charged with before inspiration, but take up as much more from the respiratory lining; so that deposition is apparently impossible.

Can these conditions be changed? Can the temperature of the air be lowered instead of raised after inspiration? If so, then vaporized medicines can be deposited through temperature influences alone where pulverized fluids can probably never penetrate without themselves being vaporized. Inasmuch as the temperature of the respiratory lining can not be safely lowered, it is evident that the only practical method is to heat the vapor before inhalation. The first question then is: At how high a temperature can air, saturated with vapor, be inhaled? Dr. Morell Mackenzie says[1] that it should never be inhaled above 160° F., and that it is practically useless below 130° F. As to the higher limit I will simply say that I have repeatedly inhaled vapors at 170° F. without the slightest discomfort. I will assume 158° F. as the safe limit, and base my calculations upon that.

The hygrometric capacity of the air increases with its temperature in a geometric ratio. In order to show the enormous increase of vapor capacity with rise of temperature, I have compiled the following table:

Temperature.	Per cent. of Vapor.	Aqueous Tension.
32° F.= 0° C.	.6	4.6 millimetres.
50° F.=10° C.	1.2	9.165 "
70° F.=21° C.	2.4	18.50 "
95° F.=35° C.	5.5	41.9 "
113° F.=45° C.	9.4	71.5 millimetres.
149° F.=65° C.	24.4	186. "
158° F.=70° C.	30.5	232. "

[1] Diseases Throat and Nose, Vol. I, p. 549.

It will be seen that saturated air at 158° F. is nearly one third vapor; and that if the relatively cold respiratory lining will cool it down to 113° F., it will be a little less than one-tenth vapor. In other words, it will deposit more than sixty-nine per cent. of the vapor which is contained at the moment of inspiration. While the cooling process commences in the mouth, it continues as far as the inspiratory volume enters. For the reasons already set forth, therefore, I believe that vapors should always be substituted for sprays, when the object is to medicate the pulmonary lining proper. In order that the best results may be obtained, and the vapor administered on a scientific basis, there are several conditions which I conceive to be indispensable, and which can only be fulfilled by some special form of apparatus. The conditions are:

1. The air and vapor to be inhaled must be confined in such a manner that it can be heated to any required degree, and the temperature steadily maintained and measured.

2. The supply of respirable air must be practically unlimited.

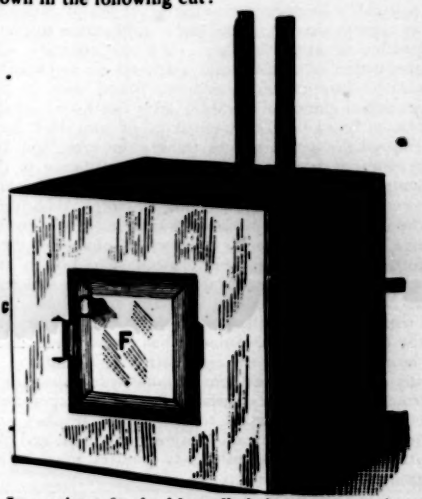
3. It must be impossible for the patient to expire into the compartment containing the medicated air.

4. It must be so arranged that it can be saturated with the vapor of either volatile or non-volatile agents, such as mercuric chloride.

5. The respirations should be unembarrassed and continuous.

6. There should be the least possible loss of heat by the vapor in its transit to the patient.

The mechanism which I have finally adopted is shown in the following cut:



It consists of a double-walled tin or copper cham-

ber, having a capacity of one cubic foot, with an air space of one inch between the walls. The external wall of the bottom has near its center a circular aperture some three inches in diameter, through which a Bunsen burner gas flame is allowed to play for the purpose of heating the contents of the chamber to the required temperature. I have found it necessary to suspend a metallic diaphragm in the air-space above this opening to prevent the flame from striking the inner wall, as the intense heat thus produced burns whatever comes in contact with the inner surface, producing pyroligneous acid and other offensive and irritating empyreumatic products. With these precautions, the chamber will contain nothing but atmospheric air and the desired vapor. In the outer wall of the cover is a smaller opening, A, which, acting as a flue, allows the mixture of heated air and gas from the Bunsen burner, after passing around the chamber in the air space between the walls, to escape without contaminating its contents. This heated air circulating through the air-space prevents the cooling of the outer stratum of the contents of the vapor chamber, with the resulting condensation. At one side of this opening are two tubes passing through both walls, containing two carefully packed thermometers, D and E, with their registers projecting above. Around the bulb of thermometer D is an envelope of thin muslin, which, being dipping into water, is kept wet by capillary attraction. These thermometers serve the purpose of a hygrometer, indicating the degree of saturation with moisture; thermometer E also registering the actual temperature of the vapor.

In front is a small door, F, six inches square, through which cups of water or medicine may be introduced; the temperature lowered if it becomes too high, or the interior cleansed.

Another opening two inches in diameter, indicated by G, but not shown in the cut, furnishes fresh air, and allows a spray to be thrown into the chamber—the quickest and most satisfactory method of charging the air with vapor. In using agents non-volatile at ordinary temperatures, this is probably the only method by which they can be diffused in a definite strength in the vapor chamber. Bichloride of mercury, for instance, can be uniformly diffused in this way so strong that the vapor is quite intolerable, and yet of a definite and easily calculated percentage.

At any time before the saturation point has been reached the thermometer with the wick around it (bulb D) will stand from five to thirty degrees lower than the other. The cooling of the bulb is produced, of course, by evaporation from the wick into an atmosphere which is capable of holding more moisture. If, when thermometer D stands say at 120° F. and E at 150° F.—a combination which I have often seen—a dense spray is thrown in, the column in D will rapidly rise to the level of E, showing that saturation has occurred. As long as these thermometers register the same temperature the air in the vaporizer is saturated with moisture for that particular temperature and pressure, and can not by any possibility contain more.

Directly opposite the opening G is a tube C communicating with the interior of the vaporizer. To this is attached the tubes for conveying the vapor to the patient. First comes an oval compartment one by two inches and one inch long, which contains two valves, H and I, for controlling the currents of inspiration and expiration. The valve H (not seen in the cut), is so adjusted as to close the passage *from* the patient toward the vaporizer, preventing the expired air from entering the latter; but opening freely in the opposite direction, allowing the passage of the medicated vapor. The valve I is so arranged that it allows the escape of the expired air between the valve H and the patient's mouth. This valve closes by its own weight at the end of expiration, so that the lungs can be filled only with the contents of the vaporizer, no air from the room being permitted to enter. The force required to open these valves (they are both self-closing) is very slight. When used in connection with pneumatic treatment the valve H opens by differential pressure, and therefore offers no resistance. The valve I must be forced open. But the light weight, and the fact that it hangs only 22½° degrees from the perpendicular makes it of little importance.

The oval compartment containing the valves can easily be taken apart after every treatment, washed with antiseptics and thoroughly flushed with water. It is covered with a rubber band to prevent radiation of heat, while an ordinary rubber tube passes directly to the patient. This tube and the oval compartment together have a capacity of seven cubic inches, which adds that much to the residual air; but I do not see how it can be materially reduced. The temperature of the vapor in passing through these tubes to the patient will fall about ten degrees; so that the dry-bulb thermometer should register about that many degrees higher than is desired for inhalation.

With better facilities than were at my command the mechanical details of this apparatus could be materially improved. But I am satisfied that it accomplishes the purposes for which it was intended, viz., the introduction into the lungs of air at a comparatively high but accurately measured temperature, saturated beyond question with medicated vapor of definite composition, using either volatile or non-volatile agents; in order that the relatively cool mucous lining may lower its temperature and cause deposit of its suspended moisture. The precise physical condition of non-volatile agents prepared in this manner is an interesting question. Such agents as mercuric chloride, sulphate of zinc, etc., can only be volatilized from the dry powder at a very high temperature. The fumes or sublimates thus produced can only be diffused through the air in uncertain proportions. If placed in solution and boiled the resulting vapor will of course contain nothing but water. But if made in solution of any desired strength and sprayed into a heated atmosphere the particles of finely divided fluid instantly vaporize, and the vapor holds in solution the same percentage of medicine as the water from which it was made. Knowing the capacity of the air for vapor at any given temperature and pressure, and having the com-

parison of the wet and dry bulb thermometers to indicate the degree of saturation, we can easily calculate the exact quantity of medicine in each cubic inch of air inspired. If we could determine the reduction of temperature and increase of pressure which takes place in the respiratory tract we would possess all the elements for an accurate computation of the amount of medicine deposited in the lungs. It remains for future investigation to complete these data if it be possible; but in the meantime, I believe that our knowledge of physical and physiological laws warrants the belief that in this direction lies the highest measure of success in typical medication of the lungs.

The idea of combining topical medication with pneumatic treatment is not of recent date. It is only necessary, however, to refer to the older methods to show their inefficiency. Crow caused compressed air to pass through one or two Wolff's bottles filled with hot aqueous solution of sal-ammoniac before inhalation. As sal-ammoniac sublimes only with dry heat it is needless to say that his patients only received hot aqueous vapor, with a few particles of solution mechanically carried over (Oertel). The quantity introduced must have been entirely problematical and accidental. This method with volatile agents was followed by Waldenburg, Cube, and Domansky. Dr. Crabbe's method was to fill the Waldenburg condenser with air charged with vapor and then compress it. A large proportion was lost in the water by compression and absorption, and only a small and indefinite quantity reached the lungs. The results were so unsatisfactory and the methods so unscientific that Oertel declared the number of medicines which could be used in this way almost limited to a few ethereal oils, and advised abandonment of further efforts to combine topical medication and pneumatic treatment. The persistent efforts which these pioneer investigators made for the simultaneous accomplishment of these two objects clearly shows their opinion of its desirability.

There are various anatomical and physiological reasons why medication of the alveolar walls can better be accomplished during increased pulmonary pressure. The increased air-space present is produced almost entirely by the distension of the elastic alveolar walls. This increases the area of absorption; and not only so, but it renders medication possible in certain areas, such as the apices, or partially collapsed lobules, where expansion is ordinarily imperfect. The increase of the tidal volume of air which spirometric tests have demonstrated, increases the movement of the lung structure, and quickens the flow of lymph in the spaces having their origin in the alveolar walls. The direction of this flow is of course *from* the alveolar septa, and to accelerate it is to promote absorption. Thus the conditions of increased intra-pulmonary pressure are the best possible for topical medication of the alveolar walls; besides which we get the combined results of the two processes.

With the older pneumatic apparatus simultaneous topical medication was manifestly impossible. With the Ketchum Cabinet, however, the conditions are under complete control, and we can distend the alveolar passages to any allowable extent, and introduce medicinal agents with the same facility as before expansion. I believe that this combination of mechanical and medicinal therapeutics offers the most favorable outlook for the treatment of that class of pulmonary diseases in which increased intra-pulmonary pressure and topical medication is indicated. This includes more particularly bronchitis and phthisis; while in the more purely mechanical treatment of emphysema, unresolved pneumonia, and pleuritic exudations, it will occasionally be found useful for the treatment of concomitant conditions.

In conclusion, it affords me pleasure to acknowledge my indebtedness to Dr. H. F. Williams, of Brooklyn, and Mr. Joseph Ketchum, of New York, for valuable suggestions.

GLANDERS IN THE HUMAN SUBJECT—WITH A CASE.

Read before the Section of Practice of Medicine, Materia Medica and Physiology, at the Thirty-Eighth Annual Meeting of the American Medical Association, June, 1887.

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Glanders is essentially an equine disease, and found among horses, asses and mules the world over. The names *equinia* and *farcy* are also given to this malady. Aristotle described a disease identical with this, among the horses of his time. Its prevalence in any country is said to increase from 50 to 100 per cent. during and after a war. As to its spontaneity veterinarians do not agree. Some aver that every case is to be traced to some other case, as in measles or small-pox in man; others deny this, claiming that, under favoring circumstances, it originates *de novo*. All agree that there is a glanders bacillus, but do not agree as to whether it is the cause or concomitant of the disease.

It is not in the province of this paper to discuss this point at length; but I cannot let it pass without calling attention to the fact that horses that have been apparently in perfect health all their lives have been known to become glanderous when crowded together on shipboard upon long voyages. This is often the case when, on account of storms, the hatches are closed much of the time, so that the air becomes stifling and impure. Horses subjected to great privation and those kept in damp, ill ventilated stables, seem sometimes to develop this disease spontaneously. It does not seem to me probable that the bacilli of glanders could exist, latent, in the animal for an indefinite period, waiting for favoring circumstances to present themselves for their development. The virus exists in all the fluids of the affected animal, even the semen. It is an important fact, to be remembered, that a glandered horse may be fat and sleek, and, because of his healthful appearance, become a ready source of contamination to other horses or to man. All are agreed that this disease

never originates in the human race. I am confident, though this is a disputed point, that its virus is a fixed poison like that of vaccinia or syphilis, and cannot be conveyed except by some form of inoculation. From my own experience and observation, as well as from the meagre literature there is upon this subject, I conclude that there must be some solution of continuity where the virus finds ingress. This may be upon the skin, or upon some mucous membrane, as the mouth, nose, air passages, or possibly the vagina.

Very little has been written upon this topic. Two centuries ago Helmont ventured the suggestion that glanders might have been the original source of syphilis. Later, Ricord revived the idea, but Virchow concludes that it is impossible. So far as I can find, the first case reported was by Lorin, in 1812. The next was by Muscroft, of Edinburgh, in 1821. Copeland, of London, also reported a case about the same time. In 1828 Prof. Coleman wrote a paper on the subject, and not long after Rayer gathered all that had been written, up to that time, into an elaborate paper published in vol. vi of "Mémoires de l'Académie Royale de Médicine." Ziemssen's work contains a lengthy article on the subject, as also Pepper's "System of Medicine." In Quain's Medical Dictionary a fair mention is made of this disease; yet I imagine that the busy practitioner who is called to a suspected case may read all that is written upon the subject, then turn away feeling that he is thrown upon his own resources for both diagnosis and treatment; and however well-read he may be, he may be pardoned for failing in his diagnosis when called to his first case, acute, subacute, or chronic.

The incubation of glanders occupies from three to five days. The attack is ushered in by a chill of greater or less severity, acute pain like that of rheumatism, yet without local inflammation, and an indescribable feeling of languor. The temperature soon becomes high, the pulse quick, weak, and unsteady, the tongue heavily coated, soon becoming dry and brown. There is constipation, and scanty urine. The teeth and lips early take on sordes. The pain continues, now here, now there, but is prone to be cephalalgic, and often intense. Nodules appear promiscuously about the face and body, and often break down into bullæ. Deep abscesses form, involving both cellular and muscular tissue; these are painful, and mature very slowly, discharging, when opened, a thin, dirty, sanious pus. At the point where the abscess is opened, a deep ulcer soon forms, which seems to be a sort of sloughing of the integument and immediately underlying tissue. These heal very slowly, if at all. A papular rash also appears here and there upon the body, but seems to be insignificant. The mucous membranes early become dry, then form ulcerated spots, from which a fetid muco pus discharges. The integument becomes earthy and cadaverous, and the whole body exhales an offensive odor. Day by day the trouble advances, baffling all efforts to check it, and the patient usually dies, in from one to three weeks, in a loathsome condition.

If the attack is subacute, the duration is longer, but is only a prolonging of the agony, until death comes to the rescue. Some cases, however, linger for months, or even years, in their misery, and finally die from exhaustion; unless, indeed, the patient becomes wearied out with what seems to be a hopeless contest, and ends his suffering by suicide. A few cases of recovery, however, have been reported. After detailing a case which was under my care for nearly two years, I will consider somewhat the differential diagnosis between this disease and several others with which it may be most easily confounded.

Mrs. Lorenson, native of Germany, a widow, æt. 23, came under my care on June 24, 1884, with the following history: In September, 1883, her husband, living near Elgin, Ill., bought a fine-looking horse, said to be suffering with an ordinary distemper, for which he at once began to treat him. Very soon after, Mr. L. was taken sick. He had a well-marked chill, severe pain in different parts of his body, and extreme languor. His physician diagnosticated some form of blood-poisoning, but could not determine its exact nature. He was seen by several competent physicians, who were all in doubt about the case, until he told them of the horse he had been treating. An examination of the horse led to the belief that its trouble was glanders. Dr. Paaren, then State veterinarian of Illinois, was called, and pronounced it a true case of glanders. There was now no doubt as to the nature of the trouble. Nodules formed here and there, and broke down into bullæ. Deep-seated, painful abscesses also appeared, and failed to heal. After about three weeks of suffering, he died in a most loathsome condition, but not until his wife had become contaminated. Her attack was similar to his, but less severe, and by prompt, energetic treatment she was so far restored as to be able to perform some domestic duties, until the following June, when she suffered a relapse and was brought to the "Poor Farm." She was placed in a small isolated house, to be cared for by a "sister" from a convent in Chicago. I now copy from my notes, taken during the progress of the case:

Mrs. L. is suffering severely from a hemicrania. She has a purulent vaginal discharge, a small ulcer on the right thigh, nearly healed, and a large one in the roof of the mouth, with angry, ragged edges, and a patch of denuded bone about 5 lines in diameter just back of the right canine tooth. Small patches of ulceration extend into and down the throat as far as can be seen. Her face is swollen, and her eyes expressionless. The tongue is heavily coated and the skin is of a dirty gray color. Her pulse is 110, very weak and unsteady. She has no appetite, is much emaciated, and a sickly odor emanates from the body. The urine is scant and thick, and bowels constipated. She has been informed that she can live but a short time, and cares not how short the time may be. Gave a brisk cathartic, to be followed by syr. iod. of iron in full doses every four hours, to be alternated with a capsule of quin. sul., ac. salicyl., and morph. sul. She is to have all the milk, beef and eggs she can take. All ulcers are to be thoroughly cleansed three times a day, and dusted with a powder of soda, sulphur and iodoform, equal parts. All her underclothing, and everything about her at

all soiled, are to be burned, and strict attention given to cleanliness, disinfection and ventilation. Frequent alkaline baths and changes of clothing ordered, and every soiled cloth or garment is to be burned as soon as removed.

July 1. Patient suffers less, and is less despondent; takes milk and eggs fairly well. Substituted pot. iod., ammon. mur., and hydrarg. bichlor. for the iodide of iron, but continue the capsules four times a day.

July 4. The iodide mixture is not well borne, give citrate of iron and quinine instead, and the capsules are to be used only for relief of pain, which is not very troublesome. A swelling under the left eye threatens an abscess, and both eyes are red and swollen. Thinking the iodoform may be the cause of some of this disturbance, this is to be used only on the leg ulcer, and the mouth ulcer is to be treated with a saturated solution of boracic acid in glycerine.

July 10. The eye trouble has disappeared, except the abscess forming under the left eye, which is now being poulticed. The vaginal discharge is much diminished, the appetite is good, and she is quite cheerful. Treatment continued.

July 12. Dr. Hard, of Aurora, visited the patient with me to-day, but declined to give any advice, except to wash ulcers in a sulphurous acid solution. A thin piece of bone, as large as the finger-nail, has exfoliated from the roof of the mouth, and the ulcer is reduced to the size of a quarter of a dollar, while those of back part of the mouth and throat have disappeared, leaving the membrane thickened and granulated, The fetor of the body is gone, but the breath is still offensive. She is gaining in flesh, and the skin has improved in color. The leg ulcer gives no further trouble. She suffers considerable pain in her back, indicating a return of her menses, which have been absent since February.

July 16. The abscess under left eye has matured and been lanced; another one appears to be forming under the right eye. There are numerous small, hard nodules about the face, and a deep, painful swelling in the calf of the left leg. An abscess has discharged spontaneously in the right labium, but gives very little trouble. Poultices are ordered for the leg, and tinct. iodine for the swelling and the nodules upon the face, and tr. of iron and cod-liver oil internally.

August 1. The abscess under right eye is discharging quite freely. The nodules are all gone, and the leg is less painful, but an abscess is unavoidable. The ulcer in the mouth is slowly healing, but an ugly one under the upper lip is very obstinate, probably because not well cleansed. I have ordered it syringed three times a day, and packed with absorbent cotton wet with boracic acid and glycerine. Her appetite remains good, and she goes about the yard, spending much of the time out of doors, when the weather permits

August 15. The mouth ulcer has healed, leaving the root of the canine tooth exposed almost to its point. That under the lip is improving. The abscess on the leg is now discharging, and giving very little trouble. A small ulcer marks the spot of the abscess under the left eye, and a large one that under the right eye, where the integument and underlying tissue sloughed, leaving an excavation 2½ inches long by 1 inch wide, extending to the periosteum, which seems healthy. The vaginal discharge has entirely ceased, but she suffers a good deal of pain in her back, for which a chloroform liniment is ordered. She is fleshy, eats very heartily, and is very hopeful.

September 1. The liniment affords but temporary relief to the pain in the back, and she is ordered to take a hip bath before retiring. The face ulcer refuses to heal, and I have cauterized it thoroughly with solid nitrate of silver. She is now taking cit. iron and quinine in maltine.

September 5. Was called in haste to-day to see my patient, and found her suffering intense pain all over her. She had had a severe chill, and now the face was very red and swollen, the pulse 120, hard and cordy, and the temperature 104°. I found that she did not take the hip bath until this morning, after which she went directly out of doors into a chilly air, and sat down for a half hour, when the chill occurred. I gave her liberal doses of quinine and aconite.

September 6. Temperature normal, pulse 90 and weak; the face still swollen and erysipelatous. The iron and quinine in maltine is resumed.

September 15. Face ulcer looks as though it would enter the eye, in spite of iodoform and argent. nitras. In all other respects she is doing well again. The ulcer which formed at the opening of the leg abscess has healed. For one week she is to take Fowler's solution, and the iodides of lime and soda in sarsaparilla, then a tonic of iron, quinine, and strychnia.

October 1. The face ulcer is at a standstill. The menses have appeared, and she says she feels well. She walks a mile without tiring, and spends all the pleasant hours in the open air.

November 1. Patient is doing well in every way, except that there is no improvement in the ulcer, which I am cauterizing every three or four days.

November 10. The ulcer has burrowed under the lid and entered the eye, lighting up a most fearful inflammation. The injected cornea is seen in a depression of the thickened conjunctiva, which has the appearance of a piece of raw beef. The aqueous humor is cloudy, and there is simply a perception of light. The pain, of course, is intense, and she utterly refuses food. Hot fomentations are to be constantly applied to the eye, and sufficient anodynes given to relieve pain.

November 15. Patient is emaciating perceptibly. She takes no food except a little milk. There is no change in the appearance of the eye, but she gets a little more sleep, by the use of the anodynes. The right side of the face is paralyzed. The extremity of the infra orbital nerve is doubtless destroyed. The appearance of the face is brutish, and she is greatly depressed mentally. It is scarcely possible to properly cleanse the eye.

December 1. She has lost all the flesh she had gained and takes no food but milk with lime water. No medicine is retained except tablets of morphine and atropia. A preparation of morphine and atro-

pia in a saturated solution of borax in rose water is applied freely to the eye. She now consents to enucleation, but the operation would be unwarranted in her condition. The pulse is 140, small and very irregular, and death seems inevitable and imminent.

December 5. Patient has rallied; pulse 100 and more regular, and the intensity of the conjunctivitis has someweat subsided. She takes more milk and a little broth, but no medicine except the tablets.

December 15. Considerable improvement. She takes one quart of milk and one or two eggs every day, besides occasionally a little broth or gruel. Her menses have again appeared. The cornea and aqueous humor are clearing slightly, and there is a corresponding improvement in the sight. There is much less pain and swelling about the eye. Local treatment continued, and tonics resumed.

January 1, 1885. Eye trouble is gradually subsiding, and a diet of milk, eggs, meat and coffee is relished. Urine scant and thick. Right knee painful, without swelling or redness. Chloroform liniment ordered for the knee, which is to be wrapped in hot cotton batting. Pot. brom., acot. rad., and spts æther nitr. in lemon syrup internally.

February 1. Destructive process in the eye has reached its height. The conjunctiva is so far destroyed that the eye seems to have no attachment except the muscles, which are visible, and the vessels and nerves; yet there are slight indications of repair. Ordered a fine powder of boracic acid and iodoform to be dusted into the eye night and morning, after thorough cleansing, and the eye to be kept covered. The kidneys are more active, and menstruation has again occurred, delayed but one week. There is a discharge of watery pus from the right ear, which is to be kept cleansed and the iodoform powder applied as to the eye. Pain continues in the knee, where an abscess is forming. The flexor tendons are quite contracted. Internal treatment, syr. iod. of iron, and quinine.

February 15. Blister applied to knee, which is still quite painful, with no progress toward suppuration. The ear gives no further trouble. Iodoform powder discontinued, and morphine and atropia solution freely applied to the eye. She eats and sleeps well and is taking on flesh again.

March 1. Gradual improvement in all respects except the knee, which remains the same in appearance, but is less painful. All sensations normal, and she would be about the house and yard but for the knee. She can see the bars in the window sash across the room with the affected eye. As an experiment am now giving her McDade's prescription instead of the tonic. The eye-wash is continued. Drs. Robbins and Milbacher, of Aurora, visited the patient with me, and advised enucleation if acute symptoms should recur so as to threaten the well eye.

March 10. Fluctuation seemed evident in the affected knee, but the exploring needle shows only blood. Blister renewed.

March 20. Patient weakens under McDade's prescription, and I have added iron and quinine for internal treatment. Poultices are resumed on knee.

April 1. Abscess lanced, discharging about 3 oz. of thin sanious pus. Poultices continued. The small ulcer under left eye is healed, and the one under right eye is nearly healed, there being only a deep spot at the right inner angle of the eye, where the lid lost its continuity with the nose. There is marked improvement in her general appearance.

April 15. A deep ulcer marks the spot where the knee abscess was opened, but there is no pain. The knee is flexed to nearly a right angle. There is a suspicious puffiness about the left ankle, with a good deal of pain. After painting the whole ankle with tinct. iodine I have applied a thick layer of cotton batting, and over this a rubber bandage, from the toes, as tight as she can bear. This is to be repeated every other day.

May 1. Right knee has healed, but is very tender and quite swollen. It is dressed simply with cotton batting, held in place by a firm roller bandage. Left ankle and foot are somewhat painful and considerably swollen. Cotton and bandages continued. She failed to menstruate in April, and feels heavy dragging pains in her back and hips; otherwise she feels well, and is gaining in flesh.

May 15. Severe pain in the left shoulder, without swelling or redness. No pain in foot or ankle. Chloroform liniment and hot cotton applied to shoulder, and sod. iod., sod. brom., and salicyl. internally, alternating with iron and strychnia. Eye trouble improves slowly.

June 1. Shoulder somewhat better, treatment continued. Under the influence of oil, rubbing and stretching, the flexion of the knee is yielding, and patient gets about the room by the aid of a chair. Deep ulcer at the inner angle of the eye is slowly filling. I apply solid argent. nitr. about once a week and the eye-wash night and morning.

June 15. Pain has passed into the right shoulder, leaving the left perfectly free, but it is not very severe. Patient is cheerful and hopeful.

July 1. Pain in shoulder is not constant, but when absent there, is felt in right thigh, but not so severe as to prevent her getting out of doors with the help of crutches. Menses appeared in May and June without pain. She can distinguish large letters with the affected eye, and knits or sews most of the time. Is now taking syr. iod. of iron in an elixir of bark and iron.

August 1. Another abscess has appeared and matured rapidly below the right knee, two inches from the site of the former. It is quite superficial, and but slightly painful. I attribute this one largely to excessive eating with too little exercise. She is very fleshy. Am varying treatment somewhat, but adhering to alteratives and tonics.

September 1. A small ulcer formed when the last abscess was opened, but filled and healed very quickly. For two weeks there has been some ulceration in the throat, which I have thoroughly cauterized every three or four days, while she has applied a powder of sulphur and soda t. i. d. Powder is to be continued. Her condition is very hopeful, though the blood is still lacking in red corpuscles.

January 1, 1886. The case has progressed well, though slowly, since last note. Menses seem fairly

reëstablished, not having missed since April. Will advise that she be moved to the Poor House, as a matter of economy to the county and of comfort to the patient. I have strong hope that in the spring she may go out into the world again, and support herself.

February 1. Patient has been removed to Poor House. Is suffering from a "cold" with some hoarseness and sore throat. The mucous membrane is rough and thickened. I cauterize it occasionally, and she applies the sulphur and soda powder. Otherwise she is doing well.

March 1. I took patient to Chicago to be operated upon for the ectropion, which, with the drooping of the angle of the mouth, is all that prevents her presenting a picture of health. The wound is healing well, but there will be but little improvement in her deformity, owing, doubtless, to the paralysis of the cheek muscles.

April 28. No appearance of a return of the disease, and I feel quite confident that, if she follows directions, she will remain free from it. For some weeks she has been taking a mixture containing tincture of iron and ammon. muriate. Upon her promise to continue this every alternate week for at least three months, I have consented to her leaving the "House," and she has gone to-day to do housework upon a farm. I will endeavor to ascertain her condition from time to time, hoping, however, that she is at last free from her malady.

As to the differential diagnosis and treatment, something remains to be said. In the onset of the disease I think we may exclude rheumatism, for though the pain is similar, we would not expect so severe an attack of rheumatism without inflammation of some of the joints. We may exclude idiopathic neuralgia, for the constitutional disturbance is too great. A severe attack of erysipelas may be suspected, but in erysipelas we do not find so much pain and depression, and the headache is general, and of a dull, perhaps throbbing character, while that of glanders is decidedly neuralgic. The initial pain, fever, and languor of diphtheria often precede the throat lesion, and are not unlike those of glanders, but if no membrane appears within 24 or 36 hours we may be warranted in excluding diphtheria. In typhoid fever we usually have premonitory symptoms. Then, too, the pain is mostly confined to the back and head. In glanders the attack is abrupt, and the pain general. One may well be pardoned for thinking he has a case of acute blood-poisoning, in which he is not able to trace the source, for glanders is emphatically a hæmotoxic affection, and both victim and physician may be entirely unsuspecting, until, perhaps, some chance remark leads to an investigation which reveals the history of glanders in connection with the case.

Between chronic glanders and secondary or tertiary syphilis there is a similarity, yet with care I think there need be no mistake. A marked characteristic in glanders is great loss of red blood corpuscles, even though the patient is well nourished otherwise. Such is not the case in syphilis. The persistent periosteal tenderness of chronic syphilis is not found in glanders, nor the copper-colored erythematous patches; syphilitic ulcers tend to spread and to deepen, and have a special affinity for the periostum and bone. Those of glanders neither spread nor burrow, except occasionally in loose areolar tissue, and it is very rare for the periosteum or the bone to be implicated. The body fætor of glanderous patients is peculiar, almost cadaverous, and not like that of syphilis. The discharges from glanderous abscesses are peculiarly ichorous, not unlike the fluid which drains from extensive gangrene. With these distinctive points in view, the careful observer should be able to distinguish between these affections.

I am of the opinion that the virus is somewhat weakened by passing through the human system, and that the disease contracted from man is more likely to be subacute, and more amenable to treatment than when contracted directly from the horse.

As to treatment, very little instruction is given in the books. Gross says: "Bleeding, both local and general, purgatives, tonics and stimulants have proved alike useless." He advises irrigation and cauterization of the wound, or excise it. This is certainly sound advice if we can see the patient before the virus has entered the system; but, unfortunately, this is seldom the case. When bitten by a venomous or rabid animal, the victim knows at once that he is injured, and seeks instant relief. The victim of glanders is unsuspecting, and almost invariably ignorant of the fact that he has been inoculated, until the incubative stage is complete, when it is too late. A few hours even will suffice to fill the system with the poison, which we must endeavor to antidote or eliminate if we think to benefit the patient. In the nature of the case all depletion must be avoided, and the system sustained by every possible means. The treatment must be prompt and heroic. After a careful study of the subject from all the sources at my command, I conclude that quinine in large doses, often repeated, so as to bring on cinchonism as quickly as possible, supplemented with tincture of iron, freely administered, either with the quinine or alternating with it, will give the best results that we can look for in this terrible disease. At the same time we must nourish the patient in every possible way. If in this way, or indeed in any way, we succeed in changing an acute into a subacute attack, we shall have increased the chances of recovery tenfold. I have a strong hope that when we shall have learned more of the true nature of this malady we shall be able to treat it with a reasonable degree of success.

I am glad to be able to add the information, just received by letter, that Mrs. Lorenson is strong and vigorous, and earning good wages as a housemaid.

Cleveland, Tenn., October 1, 1886.

DISCUSSION.

DR. SMITH, of Iowa, had had a patient similarly affected from a glanderous horse.

DR. H. W. HITZERAT, of Pennsylvania, had had a case like Dr. Cooper's first. Patient had neuralgic pains, with a fatal result in nineteen days.

Dr. Staples, of Minnesota, had a case which occurred in Readville last fall. The patient died after a short illness, with symptoms similar to those mentioned by Dr. Cooper.

MEDICAL PROGRESS.

Cannabis Indica in Diarrhœa.—Dr. Frederick F. Bond and Mr. B. E. Edwards, of Rastrick, say: Dr. S. J. Rennie, of Cawnpore, in the *Indian Medical Gasette*, for December, 1886, calls attention to the value of cannabis indica in the treatment of dysentery. We wish to draw attention to its value in a similar condition, namely: diarrhœa; especially in the type known as summer diarrhœa or English cholera. Attention was drawn to it in this connection by Dr. Turner, in the *Lancet* (vol. ii, 1886, p. 536). He says: "In ordinary diarrhœa (referring to summer diarrhœa presumably) the formula

℞ Tincturæ cannabis indicæ..... ♏x.
Spiritus chloroformi..... ♏x.
Tincturæ kino..... ʒj.
Aquam menthæ piperitæ ad..... ʒj.

in a modified dose, will be found very serviceable. Being connected with a dispensary where thirty to forty cases of diarrhœa presented themselves daily for treatment during the months of August and September, and where a great variety of remedies were tried, so great was the superiority of Indian hemp above the others, that the patients themselves got to know it, and invariably asked for the green medicine."

We have been in the habit of prescribing it in nearly all forms of diarrhœa with marked benefit, combined with medium doses of morphine. In summer diarrhœa the effects are very striking. There is no necessity to record cases, they are all very much alike; the great depression, the frequent watery stools, the vomiting, and the cramp-like pains are very quickly relieved, the appetite speedily returns, and by the following or third day the cases are practically well, except for some weakness and debility. The formula we generally use for an ordinary adult is:

℞ Tincturæ cannabis indicæ..... ♏x.
Liquoris morphinæ..... ♏v vel ♏x.
Spiritus ammoniæ aromatici..... ♏xx.
Spiritus chloroformi..... ♏xx.
Aquam ad..... ʒj.

To be repeated every one, two, or three hours according to circumstances. Directions: *No food for several hours, but a little brandy and water.* We have not seen one case run on to a fatal issue under this treatment.

It appears to act by increasing the astringent and anodyne properties of the morphine (the dose of morphine would have very little effect alone), by its stimulant effect on the nervous system, improving the tone, and by improving the appetite; thus enabling the system to quickly overcome the marked depression and exhaustion. Most remedies in this disease rather retard the return of the digestive function, but from our experience Indian hemp markedly accelerates it. Indian hemp seems, also, frequently to counteract the bilious action of morphine, as well as the loss of appetite, and allows it to be given where it otherwise would not be tolerated.

In other forms of gastro intestinal disturbance it is also valuable, probably for the same reasons. It was of marked use in a case of subacute gastro-enteritis, which had existed for a few weeks before it came under our care, in a girl aged 13 years, showing the following symptoms: marked anæmia, which had gradually come on after the other symptoms; constant pain over the abdomen, especially in the epigastric region, increased on pressure and after food; tongue covered with yellowish-white fur; loss of appetite; vomiting at variable times after food of partly digested material; diarrhœa, six or eight stools in the day, which were watery and green, containing partly digested food material; some rise in temperature—a little over 100° F. She was first treated with bismuth, then with effervescing mixtures, with no benefit; then with the cannabis mixture (modified to suit her age), and the symptoms very quickly subsided, the vomiting and diarrhœa were checked, the pain ceased, and the appetite returned. By the end of the week all the symptoms had disappeared except the anæmia, which persisted for a short time longer.

In cases of tuberculous diarrhœa we have not seen much benefit, beyond a slight relief of symptoms for a short time, though we have not had sufficient experience in this type; nor in the excessive diarrhœa in typhoid fever.—*The Practitioner*, July, 1887.

Naphthalin in Intestinal Catarrhs and Dysentery.—Following the recommendation of Professor Rossbach, Dr. N. M. Dolgopoloff, of Kürsk, administered (*Proceedings of the Medical Conference at the Kürsk Zemsky Hospital*, January–June, 1886, page 137), naphthalin in about 140 cases of acute and chronic dysentery and acute and chronic catarrh of the large bowel in children and adults. The drug was given in the dose, varying from 1 to 5 grains, five times a day, either alone, or simultaneously with an emulsion containing castor-oil and opium. Only in two cases naphthalin caused vomiting, and was discontinued; and only in four it remained inactive. In the remaining case (as far as their subsequent course was known to the author) the remedy gave excellent results, and that even in patients who had been previously vainly treated by various ordinary means. Already, after a few first days of the treatment, diarrhœa subsided to rapidly cease altogether, tenesmus diminished, stools lost their offensive odor, etc. The author details the case of a boy, aged 9, with chronic dysentery of two years' standing, where recovery ensued from the use of 60 1-grain pills (taken four or five times a day). In another child, aged 2, with dysentery of eighteen months' duration, the same result was obtained from giving 1-grain doses three times daily for twenty days. In acute cases diarrhœa sometimes ceased after a three-days' treatment by naphthalin. Dr. V. I. Doljenkoff, of Kursk, also adduces two cases of follicular enteritis where diarrhœa ceased after 3 and

2 5-grain doses of the drug. It reappeared, however, after discontinuing naphthalin. The naphthalin treatment of diarrhœa proved successful also in the hands of Drs. Kürkovsky, Falkenberg, Novikoff and Sniatkoff, while Drs. Schwarz and Karst speak of it very unfavorably.—*London Medical Record*, May 16, 1887.

HYSTERECTOMY IN CANCER OF THE UTERUS.—DR. SAUVE, of Paris (*Gaz. de Gynécologie*, Vol. II, No. 23), after having reviewed a large number of reports from other countries, summarizes the subject as follows:

1. Hysterectomy in cancer of the uterus does not deserve the disfavor with which it is regarded by the French. It is capable of affording the patient a long period of ease. In cases where the disease returns after operation it is attended with less pain.

2. Hysterectomy is indicated:

a. When a removal of a portion of the uterus has failed to give satisfactory results.

b. When such a partial operation is manifestly impossible or insufficient.

c. When cachexia is too far advanced and the parametrium is still healthy.

d. It is favorably contraindicated when there is marked cachexia adhesions with neighboring organs or implication of remote organs. As a corollary to this proposition it is necessary before operating to assure one's self of the condition of the parametrium by an examination conducted with the aid of anæsthesia.

e. The operation is not more difficult than the principal abdominal operations. The statistics of the operation are constantly improving.

f. The method of election is colpo-hysterectomy. Laparo-hysterectomy should be reserved for cases where the body of the uterus is too large to pass through the vaginal wound; it is an unsatisfactory operation under ordinary circumstances.

The most vigorous antisepsis is essential to success. Iodoform, and particularly iodoform gauze, is much more valuable than carbolized dressings. As a rule it is best to apply sutures without drainage.

TREATMENT OF FRACTURES OF THE FEMUR.—DR. THIRIAR, in an interesting clinical lecture to the Brussels medical students on the treatment of fractures of the thigh, pointed out the advantages of the telescope apparatus proposed and described by Professor Derobaix some seven years ago. This consists, firstly, of a starch bandage reaching from above the knee to the foot, provided with a stirrup and a cord, which passes over a pulley, and has a weight attached to the end in order to keep up constant extension; and, secondly, of a femoro pelvic starch bandage, which is applied two or three days after the first bandage, the upper part of which it covers so that the one may slide within the other in telescope fashion. When dry, the femoral portion is slit up. It can thus be opened and the seat of the fracture inspected at pleasure, and if necessary, manipulated by the hands, while an assistant makes any required degree of traction on the leg. Afterwards it can be tightened up by straps and buckles with which it is provided, and the limb is then absolutely protected against all lateral or see-saw movements, while the patient can be moved as much as is necessary for purposes of cleanliness without endangering the rigidity of the fractured limb. By this means Dr. Thiriar believes better results can be obtained than by any other apparatus; and he publishes a list of thirty cases, in all but two of which there was either no shortening or so little that it did not amount to a quarter of an inch. In one of the two unsuccessful cases the patient was excessively unruly, and in the other no amount of manipulation appeared to reduce the deformity when first seen.—*The Lancet*, July 2, 1887.

BINIODIDE OF MERCURY IN SCARLET FEVER.—DR. CLEMENT DUKES says: I have now given the biniodide in several cases of scarlet fever—with this result, that it not only arrests the fever, but it prevents the desquamation of the skin, or arrests it to such an extent that only a slight scurfiness of the skin of the hands and feet arises. If such be found to be invariably the case, will the bacilli of scarlet fever be found in the skin at all; and, if not, will not the infectious period of scarlet fever be thereby reduced to a few days only, and will not the sequelæ of scarlet fever be absolutely prevented?

The biniodide can be administered in the form of a pill, or as a mixture of the liq. hyd. perchloridi c. pot. iodid. The only drawback to its use which I have at present found is that if it be given before the diagnosis is absolutely certain, the physician will be apt to think, when he finds no desquamation taking place at the usual time, that the case was not one of scarlet fever. The drug prevents the desquamation of the epithelium of the tongue, as well as of the skin, and the throat rapidly heals under its use.

The benefit to be derived from the use of biniodide is far-reaching if it is reliable in all cases, for it not only prevents the desquamation of the skin, and thereby probably prevents the major part of the infectious nature of scarlet fever, but it will probably also be found that it obviates the necessity of keeping patients in bed for three weeks, which is the only safe rule hitherto, and isolated for five or six weeks, and will prevent the occurrence of the much-dreaded sequelæ.—*British Medical Journal*, July 9, 1887.

DIAGNOSIS OF BEGINNING CARCINOMA OF THE CERVIX.—Admitting the difficulties in the way of an accurate diagnosis without the aid of the microscope, STRATZ holds that such a diagnosis is not impossible. He gives the following as the principal diagnostic points:

1. The diseased part is in sharp contrast to the surrounding healthy tissue.

2. A difference in level between the diseased and the sound parts can always be seen.

3. The carcinomatious spots are always characterized by a light yellow color.

4. The malignant portions exhibit small, yellowish-white, shining elevations, at least in some parts. —*Centralblatt für Gynäk.*, No. 19, 1887.

THE
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PUBLISHED WEEKLY.

THE EDITOR OF THIS JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

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SATURDAY, JULY 23, 1887.

THE REPORT ON ANTI-RABIC INOCULATION.

Almost simultaneously with the report of the British Commission of Inquiry into M. Pasteur's Treatment of Hydrophobia, which has just appeared, comes a book entitled "M. Pasteur et la Rage," by Dr. Lutaud, editor of the *Journal de Médecine de Paris;* and as if to make the subject more complete up to date, the *British Medical Journal* of July 2 contains a letter from M. Pasteur to the Imperial Royal Society of Vienna, concerning the recent publication of Dr. von Frisch on Hydrophobia. The British Commission consisted, it will be remembered, of Sir James Paget, Sir Joseph Lister, Sir Henry Roscoe, M. P., Dr. Richard Quain, Dr. Lauder Brunton, Professor Burdon Sanderson, Dr. George Fleming, Principal Veterinary Surgeon of the British Army, and Mr. Victor Horsley, Professor Superintendent of the Brown Institution.

There is a good deal of difference between the report of the Commission and Dr. Lutaud's book. The one is the result of calm, deliberate, scientific work, the conclusions being based on *facts*, many of them being acquired by patient experimentation. Certain members of the Commission visited Pasteur's laboratory and investigated a series of his cases, and the report is founded upon their observations, upon the opinions and statistics published by M. Pasteur, and upon experiments made for the Commission by Mr. Victor Horsley. Two rabbits inoculated by Pasteur were taken from Paris to the Brown Institution, where, within a week, each developed the symptoms described as caused by rabies in rabbits. It was now necessary to prove that this disease was communicable, and that it was rabies. Without going into the details of the experiments, suffice it to say that they confirmed "the statement that the virus was contained in the spinal cord; that it could be transmitted without essential change by inoculation; that it was rendered more intense by transmission through rabbits; and that it might manifest itself either in the furious form commonly seen in dogs, or in the paralytic form usually seen in rabbits, or in intermediate forms, but that the disease was always the same—always true rabies." Pasteur's preliminary observations were thus proved to be correct, and the ground cleared for the experiments to test the claim that the virus could be so attenuated as to be inoculated without danger to animals, and that, when correctly used, it protects dogs against the effect of subsequent rabic inoculation. Mr. Horsley's investigations on this point also give sufficient evidence to show that Pasteur's claims are valid.

And now as regards the mortality of persons treated by Pasteur's method. The Commission, after taking account of sources of error in the statistics analyzed, conclude that the analysis is entirely in Pasteur's favor; they conclude that the method has saved a number of lives, "and that it is at present, and probably will be for long," the only mode of saving from death those who have been bitten by a rabid dog. As regards the alleged dangers of Pasteur's method, as asserted by many of his opponents, the Commission decide in favor of Pasteur. For an abstract of the report of the Commission the reader is referred to the "Special Article," immediately following the editorial columns in this issue. Dr. Lutaud's "M. Pasteur et la Rage" is not worthy of an extended notice. That he should have written a book of 458 pages to prove that some one else is a charlatan, and this without making any experiments, is of itself sufficient to show that Dr. Lutaud is not an impartial critic. In the absence of detailed experiments it would scarcely require so much writing to prove or disprove a theory, provided the critic were impartial.

In his letter to the Medical Society of Vienna, Pasteur gives his special attention to von Frisch, as Gamaleia, of Odessa, has already pointed out the errors of De Renzi, Amoroso and Abren in the *Annales de l'Institut Pasteur* for March 25. Von Frisch, not very long after his return to Vienna from Pasteur's laboratory, published a communication on anti rabic inoculation, in which he claimed the initiative of anti rabic inoculation on dogs after they had been infected "subdurally" with street-rabies; whereas Pasteur says that he mentioned this very

matter to von Frisch when he was in Paris, and also mentioned them at the von Frisch's visit to Burdon Sanderson, Horsley and Gamaleia. It will be remembered that von Frisch claimed that only by this method of infection, by "subdural" inoculation of street rabies, followed by anti rabic inoculation, was anyone in a position to form a judgment as to the value of Pasteur's work. Pasteur claims that this statement is inexact, and Bardach, of Odessa, has confirmed the correctness of Pasteur's statements and results in this matter by ten successes out of fifteen experiments; Pasteur's statement being that anti-rabic inoculation under such circumstances is quite different from anti-rabic inoculation after *subcutaneous* infection with street-rabies. Then again, in most of his cases, and until his attention was called to his error, von Frisch used the slow method of inoculation in "subdural" infection, whereas the slow method is inappropriate on account of the quick course in "subdural" infection. Furthermore, in his experiments on rabbits and dogs, with the view of ascertaining what influence anti-rabic inoculations, after the intensive method, had without preceding infection of the animals, von Frisch gives inoculation periods which do not correspond with Pasteur's experiments with "*virus fixe*," and he had many deaths from septicæmia, which Pasteur says is incompatible with a careful method of operating, and proof of the inaccuracy of his experiments. After Pasteur's letter was read, Dr. Ullmann made the following preliminary communication: An experimental inquiry which, like that on rabies, requires such exact manifestation and such frequent repetition of the same series of experiments cannot be brought to a useful conclusion in a short time, and this accounts for the fact that I have waited till to-day before giving a report to this learned Society the outcome of my experiments. The following are my conclusions: 1. According to the experiments which I have made, the animals do not die of rabies, owing to anti rabic inoculations. 2. Certain animals can be protected against rabies by the anti-rabic inoculations. 3. The statistics of my anti rabic inoculations on men seem to be in favor of Pasteur's method.

CLERGYMEN AND PATENT MEDICINES.

It is now eighteen years since the late Dr. S. D. Gross wrote what we believe was the first criticism of the endorsements of patent and quack medicines by clergymen, and of the advertisements of these swindles in religious papers. But as the world grows older and, we hope, better, the tendency of clergymen to speak whereof they do not know (in regard to these things) seems to have increased rather than diminished. It seems to be a curious coincidence that those clergymen who most frequently endorse patent medicines are those who are known as "popular" ministers, and whose names may be found in many daily newspapers and almost every magazine in the country as endorsing various brands of soap, stoves, pen-wipers, and many other articles of which they cannot be supposed to know more than other people.

The latest endorsement that we have seen is one of an extensively advertised stuff which has been christened "Vita Nuova," and which is claimed to cure all nervous troubles, dyspepsia, heart disease, sleeplessness, nausea, congestion, malaria, etc. It is pleasing to know that it does not cure cancer. The following endorsement is from "one of the most eminent divines of our day," says the advertisement; one who adds to his knowledge of "Vita Nuova" the title of "Prof."

DEAR FRIEND MRS. AYER: You and I have so long been personal friends that I am almost afraid that my regard for you helps make your "Vita Nuova" better than other medicines. It finds in my organism an enemy that has "held the fort" for thirty years, but it has already brought me peace and hope. It has great merit as a help to nature. I am glad it is not a magical compound, nor the juice of some plant found in the heart of Africa by some heaven-guided tramp, but is wholly rational and scientific. With kindest wishes, your friend, —

"Wholly rational and scientific!" What would be thought of a physician who would publicly endorse a pumping machine as wholly in accord with mechanical laws? Of a lawyer who would display his name in a newspaper as endorsing some new surgical operation or treatment? Just what sensible people think of a clergyman who writes such endorsements as the above.

MEDICAL RANK IN THE NAVY.

Should this country become involved in a naval war, even with better war vessels than it now has, the service would be in an embarrassing position on account of the condition of the medical corps of the Navy. A few months ago we called attention to the following paragraph in the "Report of the Surgeon-General of the Navy: "Its vacancies have not been filled for several years; resignations, deaths, and retirements having depleted it more rapidly than candidates have been obtained. . . . It is impossible, with the present inducements offered, to find young men possessing the necessary qualifications who are disposed to become medical officers of the Navy.

The Army Medical Department has qualified applicants far in excess of its needs, attracted by better pay, well-defined rank, and more satisfactory professional position. Since 1870 more than thirty young medical officers have resigned (three of them to enter the Army Corps)."

A very similar condition of affairs, so far as rank is concerned, now obtains in the British Army. Relative rank has been abolished, and the profession of almost the whole British Empire is justly indignant. And in regard to the condition of affairs in our Naval Medical Corps we may quote from an editorial in the *British Medical Journal*, of July 2: "Is it a wise and statesmanlike proceeding, all other considerations apart, to leave this wrong without a remedy? There can be but one answer to this question. It is not wise, it is not statesmanlike. Is it good to lower the self-respect of the service? Is it good for the health and efficiency of the most costly army in the world, so to treat its officers as to scare from its ranks the very men a wise Minister should do all he reasonably can to attract into it?"

MEMBERSHIP IN THE CONGRESS.—The Secretary-General of the Congress is prepared to promptly furnish all persons in other countries applying to him for registration, with a certificate of which the following is a copy:

NINTH INTERNATIONAL MEDICAL CONGRESS.
WASHINGTON, D. C., 1887.

Office of the Secretary-General:

This Certifies, That..... .....
is a Member of the Ninth International Medical Congress, and (with the members of his family), is entitled to the special rates of transportation to and from the Congress.

JOHN B. HAMILTON,
Secretary-General.

By..... .....

DUTY ON EXHIBITS FOR THE CONGRESS.—In another column of this issue of THE JOURNAL will be found an important official letter from the Secretary of the Treasury of the U. S., answering the many questions heretofore asked in reference to how far members of the International Medical Congress to convene in Washington, September 5, 1887, coming from other countries, could bring with them instruments, books, maps, or other materials to be used for illustrations in the work of the Congress, free from revenue taxes. Our foreign exchanges would confer a favor by calling the attention of their readers to the facts stated in the letter.

A VACANCY IN THE ILLINOIS STATE BOARD OF HEALTH.—It has been announced in the daily papers that Dr. George N. Kreider, of Springfield, on the 18th inst. sent his resignation to the Governor as a member of the State Board of Health, to take effect as soon as his successor was appointed and qualified. No reasons are given for such resignation.

SPECIAL ARTICLE.

REPORT ON PASTEUR'S TREATMENT OF HYDROPHOBIA.

[The report of the committee of the Local Government Board, appointed in April, 1886, to inquire into M. Pasteur's treatment of hydrophobia, was presented to Parliament on June 27. We are indebted *The Lancet*, of July 2, for the following abstract of the report:]

The report commences by stating that it was found necessary that some of the members of the committee should, together with Mr. Victor Horsley, the secretary, visit Paris so as to obtain information from M. Pasteur himself, to observe his method of treatment, and investigate a considerable number of cases of persons inoculated by him; and, further, that a careful series of experiments should be made by Mr. Horsley on the effects of such inoculation on the lower animals. Mr. Horsley's experiments are stated to entirely confirm M. Pasteur's discovery of a method by which animals may be protected from the infection of rabies. If a dog, rabbit, or other animal be bitten by a rabid dog and die of rabies, a substance can be obtained from its spinal cord which, being inoculated into a healthy dog or other animal, will produce rabies similar to that which would have followed directly from the bite of a rabid animal, or differing only in that the period of incubation between the inoculation and the appearance of the characteristic symptoms of rabies may be altered. The rabies thus transmitted by inoculation may, by similar inoculations, be transmitted through a succession of rabbits with marked increase of intensity. But the virus in the spinal cord of rabbits that have died of inoculated rabies may be gradually attenuated by drying the cords, so that after a number of days' drying, it may be injected into healthy rabbits or other animals without any danger of producing rabies; and by using on each successive day the virus dried during a period shorter than that used on the previous day an animal may be made almost certainly secure against rabies, whether from a bite or from any method of subcutaneous inoculation; and this protection is proved by the fact that if animals so protected and others not thus protected be bitten by the same rabid animal, none of the first set will die of rabies, and, with rare exceptions, all of the second set will succumb.

It may hence be deemed certain that M. Pasteur has discovered a method of protection from rabies comparable with that which vaccination affords against infection from smallpox. It would be difficult to over-estimate the importance of the discovery,

whether for its practical utility, or for its application in general pathology. It shows a new method of inoculation, or, as M. Pasteur sometimes calls it, of vaccination, the like of which it may become possible to employ for protection of both men and domestic animals against others of the most intense kinds of virus. The duration of the immunity conferred by inoculation is not yet determined; but during the two years that have passed since it was first proved there have been no indications of its being limited. The preventive treatment adopted by M. Pasteur is based on the foregoing experience; but the determination of the success of the method is far from easy, owing to—(1) the difficulty of determining whether the bites were really those of rabid animals; (2) the probability of hydrophobia in persons bitten by dogs that were certainly rabid depending very much on the number and character of the bites, whether they were on exposed parts or parts protected by clothing; and in all cases in the amount of bleeding; (3) in all cases the probability of infection may be affected by speedy cauterising or excision of the wounded parts, or by various washings, or other methods of treatment; (4) the unequal danger of bites of different species of animals, and even of different dogs. In some groups of cases the percentage of deaths among persons bitten by dogs believed to have been rabid has been estimated at only 5 per cent., in others at 60 per cent.; and the mortality from the bites of rabid wolves has been variously estimated at from 35 to 90 per cent.

By the courtesy of M. Pasteur, the committee were enabled to personally investigate ninety cases treated by him, these being mostly those which had been earliest treated, in which the periods since inoculation were longest, and living within reach in Paris, Lyons, and St. Etienne. Among the ninety cases there were twenty four in which the patients were bitten on naked parts by undoubtedly rabid dogs, and the wounds were not cauterized or treated in any way likely to have prevented the action of the virus; there were thirty-one in which there was no clear evidence that the dog was rabid; others in which the bite had been inflicted through clothes. It is estimated, from experience of the result of bites in other cases, that had they not been inoculated, not less than eight among these ninety persons would have died. Not one of them has shown since the inoculation any signs of hydrophobia.

Since, in order to quiet fears, M. Pasteur has been obliged to inoculate many in whom there was no satisfactory evidence that the bite was that of a rabid animal, it might be unjust to estimate the total value of his treatment in the whole of his cases as being more than the rate of mortality observed in them compared with the lowest rate observed in any large number of cases not inoculated. This lowest rate may be taken at 5 per cent.; and, as between October, 1885, and the end of December, 1886, M. Pasteur inoculated 2,682 persons (including 127 from this country), the mortality should have been 130. But at the end of 1886 the number of deaths was 31, including 7 bitten by wolves, in whom the symptoms of hydrophobia appeared while they were under treatment; in fact, the actual percentage of mortality was betweeen 1 and 1.2, showing, on the lowest estimate, the saving of not less than 100 lives. Of 233 persons bitten by animals in which rabies was proved, only 4 died. Without inoculation, at least 40 would have died. Among 186 bitten on the head or face by animals in which rabies was proved, only 9 died, instead of at least 40. Of 48 bitten by rabid wolves, only 9 died, instead of nearly 30. Between the end of last December and the end of March, M. Pasteur inoculated 509 persons bitten by animals proved to have been rabid; only 2 have died, one of these, bitten by a wolf a month before inoculation, dying after only three days' treatment. The committee think it, therefore, certain that the inoculations practiced by M. Pasteur have prevented the occurrence of hydrophobia in a large proportion of those who, if they had not been so inoculated, would have died of that disease. And his discovery shows that it may become possible to arrest by inoculation, even after infection, other diseases besides hydrophobia. His researches have also added very largely to the knowledge of the pathology of hydrophobia, and supplied a sure means of determining whether an animal which has died under suspicion of rabies was really affected with that disease or not.

The question whether the method itself entails risk to health or life is then discussed, the distinction between the ordinary method and the "intensive" method being pointed out. By the first method there is no evidence or probability of any danger to health at all; but after the intensive method, which is only practiced in the most urgent cases, deaths have occurred which might possibly be attributed to the inoculation rather than to the original infection. Yet in the worst cases the intensive method is relatively more efficacious than the ordinary method, nor is the rate of mortality greater after the former method than after the latter. Certain cases, one of which is detailed, have, however, excited suspicion from the mode of death. The case related is that of a man bitten by a rabid cat at the Brown Institution, treated by M. Pasteur the next day by the intensive method, continued during twenty-four days, and dying about a month later with symptoms of acute ascending paralysis. The man was very intemperate, and had been exposed to chill while crossing the Channel on his way home. Mr. Horsley proved that his death was due to the virus of rabies, by using a portion of his spinal cord for the inoculation of rabbits and dogs, who died with characteristic signs of paralytic rabies such as usually occurs in rabbits. Yet it is by no means certain that the fatal issue in this and in other cases treated by the intensive method was not due to the original infection. M. Pasteur has, however, greatly modified this plan of treatment, which he employs in none but the most urgent cases.

The final paragraphs of the report, which embody practical suggestions, may be given *in extenso:*

The consideration of the whole subject has naturally raised the question whether rabies and hydrophobia can be prevented in this country. If the protection by inoculation should prove permanent,

the disease might be suppressed by thus inoculating all dogs; but it is not probable that such inoculation would be voluntarily adopted by all owners of dogs, or could be enforced on them. Police regulations would suffice if they could be rigidly enforced. But to make them effective it would be necessary (1) that they should order the destruction, under certain conditions, of all dogs having no owners and wandering in either town or country; (2) that the keeping of useless dogs should be discouraged by taxation or other means; (3) that the bringing of dogs from countries in which rabies is prevalent should be for bidden or subject to quarantine; (4) that in districts or countries where rabies is prevalent the use of muzzles should be compulsory, and dogs out of doors, if not muzzled or led, should be taken by the police as "suspected." An exception might be made for sheep dogs and others while actually engaged in the purposes for which they are kept. There are examples sufficient to prove that by these or similar regulations rabies, and consequently hydrophobia, would be in this country "stamped out," or reduced to an amount very far less than has hitherto been known. If it be not thus reduced, it may be deemed certain that a large number of persons will, every year, require treatment by the method of M. Pasteur. The average annual number of deaths from hydrophobia during the ten years ending 1885 was, in all England, 43; in London alone 8.5. If, as in the estimates used for judging the utility of that method of treatment, these numbers are taken as representing only 5 per cent. of the persons bitten, the preventive treatment will be required for 860 persons in all England; for 170 in London alone. For it will not be possible to say which among the whole number bitten are not in danger of hydrophobia, and the methods of prevention by cautery, excision, or other treatment cannot be depended upon.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA.

Stated Meeting, April 6, 1887.

THE PRESIDENT, JOS. TABER JOHNSON, M.D., IN THE CHAIR.

DR. SWAN M. BURNETT presented a specimen and gave the history of a case of

EXTRACTION OF BLACK CATARACT FROM THE ANTERIOR CHAMBER.

The patient, a woman of 39, but who looks to be 45, was seen by him several months ago. She reports that for several years she has been blind in the right eye, and that now she could not see with the left eye. For several months she has suffered great pain in the left eye. Examination proved that there was a black cataract in each eye, and that the lens of the left eye was dislocated into the anterior chamber. This is a serious complication and usually means enucleation, but extraction is sometimes possible. She was sent to the Garfield Hospital and the operation of extraction was performed under general anæsthesia. The danger in this condition is that the lens will slip back into the posterior chamber. To prevent this escape the "bident" of Dr. Agnew, of N. Y. is used. This consists of two fine needles, mounted close together in a handle, which are struck through the cornea behind the dislocated lens, thus preventing its slipping backwards. In this case the bident being an imperfect one, he could not use it. Although the anterior chamber of the left eye was full of blood he made a slight incision, as for cataract, and enlarged it with the scissors that he might not disturb the lens.

There was no escape of the vitreous humor, and the woman is now doing well. There appears to be two forms of this peculiar cataract, c. nigra and c. pigmentosa. This latter form usually consists of a deposit of pigment in the lens proper, but that has been proved not to be so in his two cases.

DR. BURNETT presented a specimen of

BONY FORMATION IN THE EYE.

The patient, a male, was injured in the right eye by some blunt instrument about seventeen years ago. The sight was not at first impaired, but repeated attacks of inflammation with great pain compelled him to seek advice from a doctor. After a few weeks treatment the right eye was no better, and the left eye began to hurt him. Dr. Burnett sent him to the Garfield Hospital, and under general anæsthesia he found that the right eye was deformed and hard, and that there was iritis of the left eye. He enucleated the right eye and performed iridectomy on the left. The left eye is still much inflamed and it is probable that he will never be able to see out of it. The inflammation is undoubtedly sympathetic from the long continued trouble in the other eye, and if the right eye had been removed sooner it is probable that the left could have been saved.

There is no doubt that the deposit is bone, but it is in rather an unusual place, being in the choroid, and occupying the place of the vitreous humor.

DR. D. S. LAMB also presented a specimen of

BONY FORMATION IN THE EYE.

Dr. Lamb said that the case was similar to Dr. Burnett's, only he did not know the history as the eye was removed at an autopsy upon a man of 75. He believed that the trouble began with an injury. The eye is shrunken and the bony formation is cupped in front where the crystaline lens lay. The left eye showed sympathetic inflammation with opacity of the cornea.

DR. LACHLAN TYLER read a paper entitled

DIPHTHERIA AND TRACHEOTOMY,

(which will be published in an early issue).

DR. F. C. FERNALD then read a paper entitled *Three Unusual Cases of Diphtheria.*

FOREIGN CORRESPONDENCE

LETTER FROM GOETTINGEN.[1]

Koenig and Rosenbach—Goettingen Polyclinic—Empyema—Amputation of Thigh for Osteomyelitis.

My Dear Dr. Fenger:—In my last letter I promised to relate to you this time the results of my observations in Goettingen. You are aware that in our weekly colloquium at your house after my lectures Friday evenings, we have mentioned the names of Koenig and Rosenbach perhaps more frequently than the names of any other two surgeons. This was not accidental by any means, as Koenig occupies by common consent a foremost position in the list of the most prominent surgeons of Germany, a distinction he well deserves as the author of the best text-book on surgery, as a clear and impressive teacher, as an accurate clinical observer, as a bold and successful operator, and last, but not least, as a perfect type of a gentleman; while the name of Rosenbach is intimately associated with the scientific part of surgery, more especially the etiology of suppuration, the nature of osteomyelitis and the microbic origin of tetanus. Ogston and Rosenbach, who have both distinguished themselves by their investigations concerning the influence of pus microbes in the causation of suppuration, resemble each other very closely in many respects. Both are about the same age, both are hard and enthusiastic workers, and both are extremely modest men. There is perhaps not a second medical school in the world where the teachers of surgery work more harmoniously and efficiently than in Goettingen. Koenig, still active and energetic, perfectly familiar with surgical literature and with an enormous clinical experience, teaches practical surgery in such a manner that students become fascinated in the subject and perfectly grounded in this part of their professional study, while Rosenbach, who looks at everything from a scientific standpoint, stimulates students by his own example and teaching to follow him through the most profound and difficult topics in surgical pathology. A student who graduates from this university should be a good surgeon, and if this is not the case he has certainly not made the best of his opportunities. Soon after my arrival in Goettingen Prof. Rosenbach called on me at the hotel, and after a pleasant chat we called on Prof. Koenig at his own house. We found him in his study dressed in a hunting jacket, surrounded by books, pamphlets and journals. Behind his desk I noticed an extensive collection of smoking pipes systematically arranged on a rack. The collection embraced large pipes and small pipes, pipes with short stems and pipes with long stems, meerschaum pipes and porcelain pipes, and each specimen presented evidences that this array of pipes was not intended for ornamental purposes, but for comfort and enjoyment during the long hours devoted to literary study and work. Prof. Koenig is now 57 years of age, in vigorous health both mentally and physically. The tooth of time has claimed the hair on the top of his head, but otherwise has produced no visible effects. He is a little above average height, compactly built, with a well-shaped head and intelligent face, which under all conditions and under all circumstances is expressive of great determination. He is a great hunter, and when he feels himself worn out and tired he finds healthful recreation on his hunting grounds in following the hare or the nobler game in the mountains. I found him a most genial gentleman, always anxious to learn himself when brought in contact with others, and ever willing to impart knowledge to all who came to him for this purpose. I remained three days in Goettingen, and it would be difficult to imagine a place where I could have employed my time in a more interesting and profitable manner. The General Hospital is an old building, but the surgical wards are comfortable and afford room for 120 patients. As the city is small, cases of accident are few, but the wards are filled with patients suffering from all kinds of tubercular affections, tumors and deformities. The operating room is small but fully equipped with all modern improvements for the antiseptic treatment of wounds. The supply of instruments in this klinik is characteristic. Prof. Koenig makes it a rule to perform operations with few and very simple instruments. An examination of the drawers containing the instruments reminded me of a carpenter shop, as they contain a good assortment of carpenter's chisels and mallets, common drills for perforating bone, ordinary large scissors for cutting gauze and bandages, small saws and large saws, and large scissors for cutting bone which are used in the vineyards for pruning purposes; spring forceps with sharp teeth is used in preference to other forms of hæmostatic forceps; sharp spoons, from the smallest size to near as large as the palm of the hand, are present in large numbers, and suggest the frequency with which tubercular lesions are submitted to operative measures; most of the larger spoons are fenestrated. Corrosive sublimate is used for irrigation, and sublimated gauze for dressing.

Professor Rosenbach has charge of the polyclinic where every forenoon a large material is presented and where numerous minor operations are performed and proper material for the hospital selected. The result of my observations have satisfied me that these polyclinics are not sufficiently frequented by the students. The average medical student has an intrinsic desire to witness capital operations, and does not take sufficient interest in minor cases. When we recollect that only a fractional number of the thousands of medical students really become surgeons, but that all will have to depend in their future practice for their daily bread on the treatment of small, to them now unimportant things, it becomes evident that a grave mistake is committed in not making the attendance of polyclinics compulsory and a part of the curriculum of study. Teachers of surgery, as a rule, are only happy when they can present to their classes interesting, rare cases, or perform capital operations, and often deem it beneath their dignity to consume an occasional hour in the discussion of a contusion, a furuncle, a panaritium, a wart, or some other

[1] By permission of Drs. Fenger and Senn.

insignificant topic that nevertheless may affect the comfort and happiness of patients who will seek not the distinguished surgeons of metropolitan cities for relief, but who will apply for treatment to their family physicians. Many distinguished operators, who perform the most difficult and critical operations in a perfect and blameless manner, have been known to treat unimportant cases badly. The clinical teacher who complains of a lack of material is always hunting up big cases, and is only contented when he finds a case of stone, an abscess of the brain or lungs, an aneurism of some large artery, or some other pathological condition which will necessitate a brilliant operation, which perhaps not one of his students will ever be called upon to perform.

Men like Rosenbach can make a polyclinic what it should be—a stepping-stone, a preparatory course to the regular surgical clinic. During one forenoon a lad was brought into the polyclinic suffering from great dyspnœa, with a history that he had been ill for several weeks. He had been treated for pleuro-pneumonia, and as resolution did not set in at the right time, different counter-irritants were applied successively without producing the desired effect. A physical examination of the chest revealed the existence of a copious effusion into the left side of the chest, which dislocated the heart so that the apex beat could be distinctly seen under the nipple on the right side. The diagnosis of empyema was made without resorting to an exploratory puncture, from the history of the case and signs and symptoms which were presented at the time. As further loss of time was considered dangerous, the radical operation was performed at once by Prof. Rosenbach. Chloroform was administered and about an inch of the fifth rib in the axillary line resected subperiosteally, the pleura incised and the cavity drained. At least two quarts of pus escaped. No irrigation; a copious dry sublimated gauze dressing.

During the same forenoon, in the absence of Prof. Koenig, an amputation was made by Dr. Mueller, first assistant of the surgical clinic. As this case is of great interest from a clinical and pathological standpoint, I will give it somewhat in detail. The patient was a man about 35 years of age who, without any apparent cause, was attacked four weeks ago with acute osteo myelitis of the tibia. As soon as he was brought into the hospital, about a week after the commencement of the attack, Prof. Koenig chiseled the entire shaft open, and found that the disease had involved the ankle joint, which was opened and drained at the same time. The knee-joint was greatly swollen, and, as no direct communication could be traced between it and the suppurating medullary canal, it was explored and, as pus was found, it was incised and drained. As this extensive operation did not succeed in reducing the temperature or otherwise improving the general condition of the patient, amputation was advised as the only means to fulfil an *indicatio vitalis*. The operation was rendered nearly bloodless by elevation of limb and circular elastic constriction of upper portion of thigh. Antero-posterior cutaneous flaps were made, and the cut surface of the bone covered with a cylindrical periosteal flap. One deep catgut suture was introduced to prevent muscular retraction. A large gauze drain was introduced transversely in the wound, over which the skin flaps were fastened with only two sutures. Accurate suturing of wounds is considered as unnecessary, and often as injurious, in this clinic. It is claimed that when only few sutures are used better drainage is secured, and the wound heals as kindly and with as good a cicatrix as after the most careful suturing. Unless contraindications arise the first dressing is allowed to remain for a week, when the drain is removed, after which the wound heals rapidly by granulation. The thick gauze compress is covered with wax paper as an impermeable covering. Before each operation the blades of the instruments are thoroughly wiped with an aseptic cloth, and their handles washed with a 4 per cent. solution of carbolic acid.

N. SENN.

(To be concluded.)

LETTER FROM PARIS.

(FROM OUR OWN CORRESPONDENT.)

Incompatibility of Calomel and Bromide of Potassium—Bergeon's Method—Inconveniences of Iodoform—Cocaine Accidents.

In a note by M. Pierre Vigier in the *Gazette Hebdomadaire* the author brings to notice the incompatibility of the bromide of potassium and calomel. If, states the author, a few drops of a concentrated solution of the iodide of potassium be poured on calomel, the latter becomes green, that is to say, the mixture becomes a proto-iodide of mercury. This incompatibility is well known, and consequently great care is taken that these salts are not prescribed together, nor even after a short interval between them. The same precautions should be taken with the bromide of potassium, though the reaction between it and calomel is less than that between the latter and the iodide of potassium. Owing to the knowledge of this fact no medical man would prescribe the two drugs together, nor would he leave an interval of less than five or six hours between their administration; but cases may present, convulsions in children in instance, in which two physicans may have been called in successively, and where the first having prescribed calomel, the other would prescribe the bromide of potassium. The serious accidents that may result from this medication may well be imagined, and this is one reason why M. Vigier thought it necessary to bring it before the profession.

Dr. Desplats, of Lille, has reported to the medical society of that town that of five phthisical patients that he had submitted to the method of treatment by gaseous enemata, the results were as follows: Three completely unsuccessful, relief of the dyspnœa in one case, and in one instance only has there been a rapid improvement in the general state of the patient. This patient, however, had, at the time the treatment was employed, an attack of pleuro pneumonia, and the defervescence coincided with the application of that treatment, which Dr. Desplats considers quite inefficacious in any form of pulmonary phthisis, and much more so in the acute form.

The gaseous enemata have, however, an immediate action: the relief of the dyspnœa in relation to the influence exercised on the bulb by the carbonic acid and to the experiments of Professor Brown-Séquard, and a tardy action, attributed by some to the sulphuretted hydrogen and the sulphuret of carbon, and by others to the carbonic acid the sulphur waters contain. The general impression among the profession in this country is that the treatment of phthisis by Bergeon's method does not possess sufficient advantages to supersede the other methods in vogue, though it may be employed as a simple palliative. But even this property will not counterbalance the drawbacks of the method, to wit, the inconvenience that patients are put to by the frequent use of the enema, and their exposure to the risk of entero-colitis, which has been attributed to it.

Iodoform is an agent very much in vogue internally, as well as externally, as an anti-parasitic and antiseptic. Dr. A. Poncet, of Lyons, in a paper read before the surgical society of that city, related the inconveniences arising from dressings with that substance. Iodoform excites, particularly in women, an anorexia, the more intense according as the habits of the patients are more civilized or refined. The odor itself is a great drawback, and however the drug may be disguised it is always readily recognizable. The patients lose all taste for food, which is attributed to the presence in the saliva of iodides and of alkaline iodates. Dr. Poncet remarks that the buccal cavity is probably not the only medium of the elimination of iodoform, the intestinal mucous membrane and the kidneys serve as emunctories. The odor of this substance is often recognized in the sudorous secretions. The author points out the affinity that silver has for this substance, so much so that all utensils composed of this metal and used by patients saturated with iodoform become infected with the peculiar fœtid and garlic odor, in consequence of which patients who are acquainted with this fact, adopt iron spoons and forks instead of silver. In patients under treatment with iodoform, but who are not yet saturated with it, the peculiar odor of the drug may nevertheless be developed by simply placing a piece of silver in contact with the saliva of the patient, then rubbing it with a piece of linen, the metal gives out the well known odor. This the author terms the *signe de l'argent*. The researches of Dr. Cazeneuve show that the garlic odor disengaged by silver in contact with iodoform is due to the production of the iodide of silver with the formation of acetylene.

As every medal has its reverse so has cocaine, so much vaunted lately. It has rendered great service in a variety of circumstancs for the prevention and relief of pain; but several severe accidents having occurred by its administration. Dr. Dujardin-Beaumetz has thought proper to publish in the *Bulletin de Thérapeutique* a paper communicated by Dr. Bignon, of Lima, who gives the following results of a series of experiments performed by him on man and dogs with cocaine: 1. Cocaine produces only physiological effects, which are very transitory, in doses of from 30 to 50 centigrammes administered by the stomach, on condition that the drug be absorbed in divided doses of five centigrammes every hour. 2. It acts principally on the renal secretion in retarding it, in preventing the elimination partly of the products of oxidation, and in then producing the first symptoms of slight uræmia. 3. In a single large dose it produces anuria followed by grave uræmic accidents (nervous convulsive attacks etc.). 4. This paralyzing action of cocaine on the kidneys generally disappears two or three hours after the absorption of the alkaloid. It is followed by a considerable diuresis which relieves the organism, and which is the more active according as the anuria had been much prolonged. 5. Cocaine is toxic only in an indirect manner when the dose is sufficiently high to prolong anuria, to the extent of the accumulation of toxic products of the urine, in sufficient quantity to produce symptoms of uræmic poisoning. 6. If the diuresis should make the toxic phenomena to disappear rapidly, the general stimulating action continues none the less for a long time afterwards. It lasts about twenty-four hours at fifty centigrammes in the day. During all this time the phenomena of oxidation continue to go beyond the normal average, denutrition, in a word, continues. To sum up, cocaine acts in two ways: 1. In diminishing the renal secretion, and, if the dose is sufficiently high, in suppressing it during a sufficient time to produce the gravest uræmic accidents, and even death in a very short time. 2. In hastening nutrition, and then the production of the products of disassimilation or of oxidation. If, then, the dose is high, the two actions combining contribute to cause death in a very little time by uræmic accidents. If, on the contrary, the doses are divided, they leave between each the necessary time for the reaction (diuresis), and death will only be the consequence of prolonged exhaustion and decentration. A. B.

DOMESTIC CORRESPONDENCE

BERGEON'S METHOD.

Dear Sir:—In THE JOURNAL of June 18, 1887, p. 676, in the body of the "Address in Medicine" by Dr. J. S. Lynch, I find the following (I do not wish to be regarded as a champion of the Bergeon treatment of tuberculosis):

> For, admitting all that is claimed as to the agency of microbes in setting up and keeping up disease processes, it must be remembered that they are biologically as high in the plane of life, and if all experiments can be believed, have a higher resisting power than the cells which compose the living elements of our tissues. *Any germicide therefore, which can destroy the one, must inevitably destroy the other.*

I am of the opinion that the above reasoning is faulty and would lead young practitioners astray. In vol. xvii, page 662, Ziemssen's Cyclopædia of Practice of Medicine we find the following: "Cases of poisoning have also been recorded, from human beings eating the flesh of animals, which had fed upon belladonna leaves without danger to themselves; among the animals to which atropia is innocuous are

rabbits, pigeons, rats and guinea pigs." Snails are also said not to be affected by it.

We have been informed that sulphate of strychnia, in the dose of thirty to sixty grains will not kill a hog. It must also be a patent fact that solanine will not kill potato bugs, while it is certain to kill a man. We also wish to call attention to the fact that the dose of veratrum viride that would be harmless to a white man, would be a very dangerous one to give a negro. It is also known that on the other hand santonine is practically non poisonous to the human family, while it readily kills intestinal parasites.

I do not wish to plead for or against the treatment of tubercle by gaseous enemeta but from Dr. Lynch's remarks I believe that he has placed the cart before the horse; as you read from line 19, page 676, of THE JOURNAL:

> Even then, admitting that his mixed gases can destroy the microbes, which seems highly improbable, in view of the fact that, they are continually exposed to an atmosphere so highly charged with *carbonic dioxide* that its retention in the lungs for five minutes will produce unconsciousness, it is not clear how they are to reach the objects intended to be destroyed.

If I understand the theory set forth by Bergeon, it is the sulphuretted gases that do the work, and the carbon dioxide is used as a diluent to carry the sulphydric acid gas to the scene of trouble in such condition, that it shall not cause erosion of the mucous membrane of the bowels or other tissues with which it may come in contact.

In the treatment of pulmonary tubercle, who has seen any marked effect from any kind of treatment? Let us be cautious in making experiments with this plan of treatment, and if any benefit can be secured from the so-called gaseous enemata we would like to know it; if not, lay it away in its sarcophagus to rest with the dead.

I think Dr. Lynch would have us believe that what is life to one, is life to all; and that that which will kill one form of animal life will kill all forms. But as a matter of fact this is far from being true, as will be seen from the above quotations. Even among patients in the same family, we find that that which will favor life and health in one member, if continued, would produce disease and ultimately death in another of the same blood. Why it is we do not know. The unknown quantities in the equation of life as yet have not all been solved, and much may be learned from empiricism. ORSON MILLARD, M.D.

Flint, Mich., June 27.

POISONING BY POKE ROOT.

Dear Sir:—On the evening of March 25, 1887, I was called in haste to see J. H., a stout, muscular colored man, 39 years of age, who was said to have been suddenly attacked with "vomiting and cramps in his bowels." I obtained the following history from him. In the afternoon an old vender of domestic medicines was in the city, with among other things, a large quantity of poke root, which he said was good when put in whiskey to purify the blood. My patient asked him if it was not good to chew also, and upon receiving an affirmative answer, placed a small piece—probably ʒj or ʒij—in his mouth and began to chew it and swallow the juice. This was about 3:30 P. M. About one hour later, being thirsty, he drank a pint of cold water and shortly afterwards nausea set in, soon followed by vomiting, at first of the contents of the stomach and then of a greenish colored and very bitter fluid. He continued to vomit frequently till 7 P. M. when he began to have severe pain in his bowels, accompanied by free purgation and hæmatemesis.

When I first saw him, at 7:30 P. M., he complained of heaviness in the head and dizziness, was suffering severely from pain in the abdomen, and said he felt as though there was a hard lump in his stomach. He was considerably prostrated and sweating freely; pulse 90, soft and compressible. At 8 P. M. I gave him subnit. bismuth, gr. x, morph. sulph. gr. ⅓, and ordered it to be repeated in half an hour if he obtained no relief and also to have hot, dry woolen cloths applied to his abdomen, and allay his thirst with mucilaginous drinks. At 9 P. M. I saw him again. He was a little easier, but had vomited three times in the interim, and each time a considerable quantity of blood. I now gave him morph. sulp. gr. ¼, dissolved in a little cold water, after which the pain soon subsided. He vomited twice during the succeeding hour, then fell asleep and awoke the next morning comparatively well. ALEXANDER GUTHRIE, M.D.

Cairo, Illinois.

TREATMENT OF DYSPEPSIA.

Dear Sir:—In THE JOURNAL of July 2 is an article giving Dr. Talma's treatment of dyspepsia with hydrochloric acid. For the last twelve years I have met with almost unlimited success in treating dyspepsia with this agent, though I perhaps use it in stronger solution than Dr. Talma. I use it in the proportion of about ʒij nitro-muriatic acid to ʒiv water, believing that the combination of the two acids is better than one alone. I invariably give the solution in teaspoonful doses immediately after meals. I have treated some of the most severe cases, and have cured some of the most obstinate, with this combination.

When the heart is sympathetically affected I have used tinct. digitalis, gtt. v–vj, three times a day with good results.

When there is constipation I have of late had excellent results from a combination of cascara sagrada and fluid extract juglans cinerea, teaspoonful three times a day. I insist that my patients should abstain from tea and coffee, and use either water or milk, especially buttermilk, which seems to have an excellent effect upon the stomach and alimentary canal generally, giving health and vigor to the absorbent vessels.

When there is much gastric distress after eating a few drops of chloroform will soon relieve the pain.

In severe cases of gastralgia there is nothing better, in many cases, than oil of cojeput, gtt. v–vj.

In cases of vomiting, chloroform has a soothing effect, and sometimes a small dose of morphia has a good effect in quieting the nervous system. Or a mustard plaster or horse radish leaves may be used.

In some cases in which the patient uses tobacco I forbid it, and the patient gets well without medicine.

Harmon, Ill., July 5. WM. HENRY, M.D.

INTERNATIONAL CONGRESS.

GENERAL PROGRAMME OF THE CONGRESS.

As there appears to be a very general desire, both at home and abroad, to have the programme of arrangements for the meeting of the International Medical Congress made public, I herewith submit the formula therefor determined upon by the Committee of Arrangements intrusted with that duty.

FIRST DAY—MONDAY, SEPTEMBER 5.

The Congress will assemble at Albaugh's Opera House at 11 A.M., and will be formally opened by the President of the United States, to be followed by a short address of welcome by the Secretary of State; Address by the President of the Congress; Report of Secretary-General and Chairman of Committee of Arrangements. Adjourn at 1:30 P.M. From 3 to 6 P.M., meeting of the Sections at their respective halls. Evening *conversazione* at U. S. Pension Hall from 8 to 11 P.M.

SECOND DAY—TUESDAY, SEPTEMBER 6.

Meeting at 10 A.M. at Albaugh's Opera House. General Addresses by Drs. Flint and Semmola. Sections will meet at 11 A.M., and adjourn at the same hour with Congress at 1 P.M. In the afternoon the Sections will meet from 3 to 6 P.M. In the evening it is expected that a reception will be given by the President of the United States, and the Corcoran Art Gallery will be thrown open to the members and their families.

THIRD DAY—WEDNESDAY, SEPTEMBER 7.

The Congress will meet at 10 A.M. General Addresses until 1 P.M. The Sections will meet as usual at 11 A.M., and adjourn at 1 P.M. Afternoon meeting of the Sections from 3 to 6 P.M. Evening reception to the members and their families by the citizens of Washington.

FOURTH DAY—THURSDAY, 8TH.

General meeting at 10 A.M. Addresses, if not previously delivered. Meeting of the Sections at 11 A.M.; adjourn at 1 P.M. Afternoon, Sections meet from 3 to 6 P.M. General reception buffet banquet at U. S. Pension Hall from 8 to 11 P.M.

FIFTH DAY—FRIDAY, 9TH.

General meeting at 10 A.M. Transaction of business affairs of Congress. Meeting of Sections at 11, and adjourn at 1 P.M. Afternoon, Sections meet from 3 to 6 P.M.

SIXTH DAY—SATURDAY, 10TH.

General meeting at 10 A.M. Adjourn at 11 for visit to Mt. Vernon.

On Sunday or Monday, the day not yet determined upon, an excursion train will leave Washington with the foreign members and their families for Niagara Falls, under the escort of a part of the committee of arrangements, selecting the route which will afford our foreign brethren an opportunity to see some of the most interesting and thrifty portions of our country, as well as very beautiful scenery.

In completing the details of this programme it may be necessary to make some slight modifications.

I send herewith an important communication from the Chairman of the Sub-Committee on Transportation, Dr. J. W. H. Lovejoy.

ALEX. Y. P. GARNETT, M.D.,
Chairman of Committee of Arrangements.

RAILWAY RATES TO WASHINGTON.—The Railroad Associations which have already agreed to make a reduction of fare for members of the Congress and their families on the roads under their control are:

The Trunk Line Association.

The Central Traffic Association.

The Newport News and Mississipi Valley Company.

The Southern Passenger Association.

These cover the greater part of the territory east of the Missouri and Mississipi rivers. The whole list of roads controlled by these Associations is too large for publication, but members can obtain all the necessary information by application to the railroad agent at the starting point. It will be required to pay full fare to Washington and a return will be allowed for "one-third the highest limited fare" on the Association's certificate. It will be necessary for these certificates to be procured before starting and have upon them the receipt of the railroad agent for the full fare to Washington. Members intending to attend the Congress should, as soon as possible, make application to the undersigned for blank certificates of the Association over whose roads they intend to travel, and the blanks will be forwarded at as early a date as they can be obtained. A separate certificate will be required for each person.

J. W. H. LOVEJOY, M.D.,
Chairman Transportation Committee.
No. 900 12th St., Washington, D. C.

DUTY ON EXHIBITS FOR THE CONGRESS.

[The following letter from the Secretary of the Treasury to Dr. John B. Hamilton, Secretary-General of the Ninth International Medical Congress, is of especial interest to our foreign confrères who wish to attend the Congress:]

Sir: In reply to the inquiries contained in the letter of F. H. Rehwinkel, M.D., referred by you to this department, I have to state that the professional books, implements, instruments, . . . of persons arriving in the United States are exempt from duty under the provisions of the tariff law, which also provides for the free admission of "models of inventions and other improvements in the arts, such as cannot be fitted for use," and that parties arriving from foreign countries for the purpose of attending the Ninth International Medical Congress, to meet at Washington September 5, 1887, and who bring with them their own "surgical or dental instruments, scientific and mechanical appliances, models and materials to be used for clinical demonstration under the direction of said Congress," will be entitled to have the same passed free of duty,

on the usual oath that they are for their personal use and are not intended for sale.

As it would appear from the act of Congress relative to said convention that the said Ninth International Medical Congress is a society established for philosophical and scientific purposes—books, maps and charts (not more than two copies in any one invoice), philosophical and scientific apparatus, instruments and preparations, casts, paintings, drawings and etchings, specially imported in good faith for the use of said Congress and not intended for sale, would also seem to be entitled to free entry under the provisions of the tariff act now in force, a copy of which is herewith enclosed. (See paragraphs 660, 759 and 815.)

Copies of this letter will be transmitted to the Collectors at the principal ports for their information and guidance. Respectfully yours,

(Signed) C. S. FAIRCHILD,
Secretary of the Treasury.

BOOK REVIEWS.

LEHRBUCH DER KINDERKRANKHEITEN. Von Prof. DR. ALFRED VOGEL in München. Neunte Auflage, neu bearbeitet von DR. PHILIP BIEDERT, Oberarzt am Bürgerspital und Kreizazrt in Hagenau. Mit 6 lith. Tafeln. 8vo, pp. xvi-600. Stuttgart: Verlag von Ferdinand Enke, 1887.

DISEASES OF CHILDREN. By PROF. DR. ALFRED VOGEL, of Munich. Ninth edition, newly revised by DR. PHILIP BIEDERT, of Hagenau. With 6 lithograph plates. Stuttgart: Ferdinand Enke, 1887. Chicago: Koelling, Klappenbach & Kenkel.

It is just twenty years since the first edition of this work was issued, and the appearance of the ninth edition now shows that it was not written in vain. For several years the book has been favorably known to and received by English reading medical men through translations. The very thorough revision to which the book was subjected two years ago by the author has precluded any very essential changes in the present edition. For the benefit of those who are not already acquainted with the work the following summary of its contents may be of interest: The general part consists of four chapters, which deal with "physiological and anatomical structure of the infantile organism," "general rules for the examination of children," "treatment and medication of children in general," and the "feeding and care of children." The special part consists of nine chapters, dealing with "diseases arising from labor," "diseases of the digestive apparatus," "diseases of the respiratory organs," "of the circulatory organs," "of the nervous system," "of the urinary and genital organs," "of the skin," "general diseases; dyscrasiæ," and "diseases of the organs of locomotion." Professor Vogel's book has passed the stage of criticism, and as "good wine needs no bush," so it needs neither analysis nor commendation at our hands.

ELEMENTS OF PHYSIOLOGICAL PSYCHOLOGY. A Treatise on the Activities and Nature of the Mind from the Physical and Experimental Point of View. By GEORGE T. LADD, Professor of Philosophy in Yale University. 8vo., pp. xii-696. New York: Chas. Scribner's Sons, 1887. Chicago: A. C. McClurg & Co.

Professor Ladd has set himself the task of putting forth the assured or alleged results of Physiological Psychology, keeping in view the belief that there is no ground for extravagant claims or expectations, and still less ground for any fear of consequences, in the way of falling upon something which would prove that perhaps, after all, man is not a spiritual and rational being. The book which he gives us is the first fruit of American work in this field, which covers the whole subject, and with the exception of Wundt (Grundzüge der physiologischen Psychologie), there is no other work at all which even attempts to cover the entire ground. How well the territory has been covered is difficult to show in a short notice of a work on so comprehensive a subject. Throughout the book it is apparent that the author's aim is to get at the truth, or as near to it as possible, not only by following known roads, but also by exploring unknown by-paths. It is a most carefully written book, and cannot fail to interest one at all partial to a study of philosophy and of physiology of the mind.

ANATOMY, DESCRIPTIVE AND TOPOGRAPHICAL, in 625 Illustrations. By CARL HEITZMANN, M.D. English edition by LOUIS HEITZMANN, M.D. 8vo, pp. xxii-238 270-36. Vienna: W. Braumüller. New York: J. H. Vail & Co., 1887.

The fact that more than 30,000 copies of Heitzmann's "Anatomischer Atlas," the basis of this work, have been sold in the last sixteen years in Germany should be taken as evidence that the work is a good one. And yet we cannot consider a work on anatomy complete unless it takes some account of anomalies; and anomalies are not mentioned in this book, except some of those of the branches of the arch of the aorta and in the course of the obturator artery. As a guide to dissection it might answer very well, but in its present shape and style its title is a misleading misnomer.

WHAT TO DO IN CASES OF POISONING. By WILLIAM MURRELL, M.D., F.R.C.P., Lecturer on Pharmacology and Therapeutics in the Westminster Hospital, etc. First American from Fifth English edition. Edited by Frank Woodbury, M.D., Professor of Materia Medica, Therapeutics, and of Clinical Medicine in the Medico-Chirurgical College of Philadelphia. Sm. 8vo, pp. 158. Philadelphia: The Medical Register Co., 1887.

Dr. Murrell is a very terse writer. The preface to this little book shows that he wastes no words: "A complaint has been made that the book is getting too big. I admit it, but the fact is, there are too many poisons now a-days. If people who contemplate committing suicide would only adopt a uniform method it would facilitate matters greatly." Of

course a book on the treatment of poisoning by Dr. Murrell is almost entirely based on a thorough knowledge of pharmacology; and he rightly says that one who forgets the antidotes to poisons cannot have a proper knowledge of this important branch of medicine.

The book is conveniently arranged for ready reference, and besides the bald facts of treatment contains many useful suggestions. With the exception of one particular it seems to be complete: no mention is made of transfusion in gas poisoning, and this must be regarded as a serious defect.

A TREATISE ON SIMPLE AND COMPOUND OPHTHALMIC LENSES; their Refraction and Dioptric Formulæ, including Tables of Crossed Cylinders and their Sphero-Cylindrical Equivalents. By CHAS. F. PRENTICE. Publishers, James Prentice & Son, Opticians, 179 Broadway, New York.

This is a neatly printed and abundantly illustrated little volume of 40 pages. The contents of the volume are well indicated in the above title, and the style of the author is simple, and his methods of illustration easily understood.

MISCELLANEOUS.

HEALTH IN MICHIGAN, JUNE, 1887.—For the month of June, 1887, compared with the preceding month, the reports indicate that diarrhœa, cholera morbus, intermittent fever and cholera infantum increased, and that pneumonia, influenza, bronchitis, tonsilitis and measles decreased in prevalence. Compared with the preceding month, the temperature in the month of June, 1887, was higher, the absolute humidity was more; the relative humidity was slightly more; the day and the night ozone were less. Compared with the average for the month of June in the nine years 1879–1887, neuralgia increased, and intermittent fever, remittent fever, consumption of lungs, scarlet fever, diphtheria and bronchitis were less prevalent in June, 1887.

For the month of June, 1887, compared with the average of corresponding months in the nine years 1879–1877, the temperature was slightly higher; the absolute and the relative humidity were slightly more, and the day and the night ozone were slightly less.

Including reports by regular observers and others, diphtheria was reported present in Michigan in the month of June, 1887, at thirty-nine places; scarlet fever at forty-two places; typhoid fever at twelve places; measles at thirty six places; smallpox and typhus fever at one place. Reports from all sources show diphtheria reported at nine places more; scarlet fever at ten places more; typhoid fever at eight places more; measles at fourteen places less, and smallpox and typhus fever each at one place more in the month of June, 1887, than in the preceding month.

THE ALUMNI ASSOCIATION PRIZE OF THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK CITY.—This prize of $500, open to the Alumni of the College, will be awarded to the best *medical essay* submitted to the Committee, upon any subject the author may select. Essay must contain the results of original investigations or research made by the writer. Each essay must be marked with a device or motto, and accompanied by a sealed envelope similarly marked, containing the name and address of the writer. Essays for the prize to be awarded in May, 1888, must be sent to a member of the Committee, on or before April 1, 1888. ANDREW J. MCCOSH, M.D., WILLIAM G. THOMPSON, M.D. and M. ALLEN STARR, M.D., are the Committee.

DR. HARVEY REED, of Mansfield, O., has been appointed Surgeon-in-Chief of Trans-Ohio Division of the Baltimore & Ohio Railroad.

THE HOT WEATHER IN CHICAGO.—From the effects of the heat of last Friday, Saturday and Sunday 165 people died in this city. For the week the deaths from insolation number more than one-fourth of the total nnmber of deaths.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JULY 9, 1887, TO JULY 15, 1887

Lt.-Col. A. Heger, Surgeon, ordered to Ft. Columbus, New York Harbor.

Major J. H. Janeway, Surgeon, ordered to Benicia Bks. as Post Surgeon; also as attending surgeon at Benicia Arsenal, Cal.

Capt. H. P. Birmingham, Asst. Surgeon, ordered to Ft. Myer, Va.

First Lieut. C. E. Woodruff, Asst. Surgeon, ordered to Ft. Mackinaw, Mich.

Capt. C. K. Winne, Asst. Surgeon, ordered to Ft. Wadsworth, New York Harbor.

Capt. Valery Havard, Asst. Surgeon, ordered to Ft. A. Lincoln, D. T.

Capt. L. M. Maus, Asst. Surgeon, ordered to Ft. Schuyler, New York Harbor.

Capt. J. B. Girard, Asst. Surgeon, ordered to Ft. Lowell, Ariz.

First Lieut. J. D. Poindexter, Asst. Surgeon, ordered to Camp Poplar River, M. T.

First Lieut. C. N. B. Macauley, Asst. Surgeon, ordered to Ft. Gibson, Ind. Ter.

Capt. C. B. Byrne, Asst. Surgeon, ordered to Washington Bks., D. C.

Capt. T. E. Wilcox, Asst. Surgeon, ordered to Ft. Niobrara, Neb.

Major H. Lippincott, Surgeon, ordered to Ft. Union, N. M.

Major P. J. A. Cleary, Surgeon, ordered to Ft. D. A. Russell, Wyo.

Major D. G. Caldwell, Surgeon, ordered to Ft. Assiniboine, M. T.

Capt. G. H. Torney, Asst. Surgeon, ordered to Ft. Robinson, Neb.

Capt. Walter Reed, Asst. Surgeon, ordered to Mt. Vernon Bks., Ala.

Capt. J. H. Patzki, Asst. Surgeon, ordered to Ft. Huachuca, A. T.

Capt. R. G. Ebert, Asst. Surgeon, ordered to Ft. Custer, M. T.

First Lieut. J. E. Pilcher, Asst. Surgeon, ordered to Ft. Monroe, Va.

Capt. J. de B. W. Gardiner, Asst. Surgeon, ordered to Ft. Washakie, Wyo. Ter.

First Lieut. A. R. Chapin, Asst. Surgeon, ordered to Newport Bks., Ky.

Major W. H. Forwood, Surgeon, ordered to Ft. Snelling, Minn.

Capt. H. O. Perley, Asst. Surgeon, ordered to Ft. Wayne, Mich. S. O. 156, A. G. O., July 8, 1887.

S. O. 159, par. 2, A. G. O., July 12, 1887, assigns Capt. W. Matthews, Asst. Surgeon, as member of Army Retiring Board at Washington, D. C., and relieves Capt. J. O. Skinner, Asst. Surgeon.

Capts. L. M. Maus and H. O. Perley, Asst. Surgeons, ordered to accompany the Eleventh Infantry in changing station from Dept. Dakota to Dept East. S. O. 158, A. G. O., July 11, 1887.

Capt. E. F. Gardner, Asst. Surgeon, ordered to accompany the Twelfth Infantry from Madison Bks. to Duluth, and to return with Eleventh Infantry. S. O. 143, Div. Atlantic, July 13, 1887.

Capt. R. G. Ebert, Asst. Surgeon, will, in changing station from Ft. Hamilton, New York Harbor, to Ft. Custer, Montana, accompany the Twelfth Infantry from Dept. East to Dept. of Dakota. S. O. 159, A. G. O., July 12, 1887.

First Lieut. F. V. Walker, Asst. Surgeon, granted leave of absence for four months. S. O. 160, A. G. O., July 13, 1887.

First Lieut. Julian M. Cahill, Asst. Surgeon, ordered for duty as medical officer at Dept. Rifle Camp, near Bellevue, Neb., August 1 next. S. O. 66, Dept. Platte, July 8, 1887.

A board of medical officers, to consist of Major J. S. Billings, Surgeon; Capt. W. Matthews, Asst. Surgeon; Capt. F. C. Ainsworth, Asst. Surgeon, is constituted to meet in this city for the examination of a candidate for admission to the Medical Corps of the Army. S. O. 157, A. G. O., July 9, 1887.